The Long Form and American Community Survey Questions:

Their Relevance to Transportation

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1.0 Introduction

Decennial census data on the Journey-to-Work (JTW) from 1960 onward have been of vital importance for transportation planning at the federal, state, regional and local levels. Aside from the U.S. Department of Transportation (USDOT), there are 52 State Departments of Transportation (District of Columbia, Puerto Rico), and 340 Metropolitan Planning Organizations (MPOs) that will use 2000 decennial census long form data in their work to conduct Congressionally mandated planning activities.

The transportation community has been interested in the topic of continuous measurement since the early 1990's. In 1996, the USDOT sponsored several papers and a workshop on the "Implications for Continuous Measurement." One outcome of the workshop was a recommendation that the U.S. Census Bureau (CB) conduct a test of the continuous approach so that the results could be compared with the Census 2000 long form results. The CB implemented this approach, with the 1999-2001 ACS test.

1.1 Expenditures of Highway Trust Fund Dollars

Under the Transportation Equity Act for the 21st Century (TEA-21), $217 billion was authorized for FY 1998 through FY 2003. Of that, approximately 79 percent is authorized for the Federal-Aid Highway program, and programmed by and through the states and local agencies. For the states and local agencies to program these funds, they have to satisfy specific laws and regulations. One of the key components is the requirement for a certified planning and programming process (23 U.S.C. 134 and 135). A major component of the planning process is its technical and analytical capability. This capability is built upon sound data for small areas. The Journey-to-Work (JTW) and mobility questions on the long form/ACS provide these critical building blocks.

1.2 Sponsorship of Special Tabulation

USDOT coordinated a JTW special tabulation from the CB in 1970, 1980, 1990 and 2000. Of the more than seventy special tabulations produced by the CB, the JTW tabulation is the largest (budget-wise). To support this effort, the states and MPO's have combined their resources to pay for this special product known as the Census Transportation Planning Package (CTPP). The final specifications for CTPP 2000 are currently being finalized for submission to the CB Disclosure Review Board.

Over the period covering the last four decennial censuses, place of work information in combination with place of residence has become a critical component in transportation applications. The $3 million paid for the 2000 tabulations, plus the substantially larger amounts that will be spent in analyzing and using the data, demonstrates the importance of this information.

In addition to the sponsorship of the actual tabulations, 280 MPOs invested their staff resources to build a special zonal structure known as Traffic Analysis Zones (TAZs).

These TAZs are now included in the CB TIGER/Line Database. This work alone was a combined effort estimated to cost over $2.8 million. In addition, 180 MPOs participated in an effort to verify and correct the base files that the CB uses for identifying place-of-work locations.

Coupled with this state and MPO support, the USDOT has maintained staff to coordinate and plan CTPP 2000, provided guidance in the use of the data and cooperated with the stakeholders in an aggressive outreach campaign.

2.0 Legislative Basis for the Data

There is an extensive programming system that has grown from federal regulations and relies on long form/ACS data. Exhibit 1 identifies the major legislation, regulations and an Executive Order. Taken together, these materials pave the way for the use of the census long form/ACS data by the transportation community. Even though the long form data are used to support a wide variety of federally mandated programs, there is no specific legislative or regulatory wording that requires the CB to provide any data other than population.

One of the most notable examples of how the planning and programming system relies on the long form/ACS data, has grown out of the regulations promulgated to implement the Clean Air Act Amendments of 1990--CAAA (Title 42 U.S.C. Section 7401 et seq.). Under the metropolitan planning requirements of Titles 23 and 49 U.S.C., projects cannot be approved, funded, or advanced through the planning process, or implemented unless those projects are in a fiscally constrained and **conforming transportation plan**, and transportation improvement plan.

For a plan to conform, its impact on the air quality must be analyzed. To do that analysis, the Clean Air Act regulations (40 CFR 93.111) specify that network-based models be used. These models rely upon the census data as will be explained later in section 4.2.1.

Exhibit 1: Relevant Laws, Regulations and Executive Orders

Title	Section Name and Number		Webpage
23 U.S.C., Highways, Chapter 1, Federal-Aid Highways	Metropolitan Planning	134	Http://www4.law.cornell.edu/uscode/23/134.html
	Statewide Planning	135	Http://www4.law.cornell.edu/uscode/23/135.html
	Public Transportation	142	Http://www4.law.cornell.edu/uscode/23/142.html
	Carpool and Vanpool Projects	146	Http://www4.law.cornell.edu/uscode/23/146.html
	Congestion Mitigation and Air Quality Improvement Program	149	Http://www4.law.cornell.edu/uscode/23/149.html
	Management Systems	303	Http://www4.law.cornell.edu/uscode/23/303.html
	Magnetic Levitation Transportation Technology Deployment Program	322	Http://www4.law.cornell.edu/uscode/23/322.html
	Prohibition of Discrimination on the Basis of Sex	324	Http://www4.law.cornell.edu/uscode/23/324.html
	Highway Safety Programs	402	Http://www4.law.cornell.edu/uscode/23/402.html
49 U.S.C., Transportation, Chapter 53, Mass Transportation	Metropolitan Planning.	5303	Http://www4.law.cornell.edu/uscode/49/5303.html
	Transportation Improvement Program	5304	Http://www4.law.cornell.edu/uscode/49/5304.html
	Formula Grants and Loans for Special Needs of Elderly Individuals and Individuals with Disabilities	5310	Http://www4.law.cornell.edu/uscode/49/5310.html
	State Planning and Research Programs	5313	Http://www4.law.cornell.edu/uscode/49/5313.html
42 U.S.C., Section 2000d et seq. and DOT Title VI implementing regulations 49 CFR Part 21.	Title VI of the Civil Rights Act of 1964, as amended	2000d	Http://www4.law.cornell.edu/uscode/42/2000d.html
42 U.S.C., Public Health and Welfare, Chapter 55, National Environmental Policy	National Environmental Policy Act as codified	4321 et seq.	Http://www4.law.cornell.edu/uscode/42/4321.html
42 U.S.C., Public Health and Welfare, Chapter 85, Air Pollution Prevention and Control	Air Quality and Emission Limitations	7401 et seq.	Http://www4.law.cornell.edu/uscode/42/7401.html
40 C.F.R. Part 93	Determining Conformity of Federal Actions to State or Federal Implementation Plans		http://www.access.gpo.gov/nara/cfr/waisidx_00/40cfr93_00.html
Executive Order 12898	Federal Actions to Address Environmental Justice in Minority Populations and Low-income Populations		http://www.fhwa.dot.gov/environment/ej2000.htm
DOT Order 5610.2	Department of Transportation (DOT) Order To Address Environmental Justice in Minority Populations and Low-Income Populations		http://www.fhwa.dot.gov/environment/ejustice/dot_ord.htm
FHWA Order 6640.23	FHWA Actions to address Environmental Justice in Minority Populations and Low-Income Populations		http://www.fhwa.dot.gov/legsregs/directives/orders/6640_23.htm

PL-105-178	Transportation Equity Act for the 21st Century		http://www.fhwa.dot.gov/tea21/tea21.pdf
23 CFR 450.316-322	Metropolitan transportation planning process		http://www.access.gpo.gov/nara/cfr/waisidx_00/23cfr450_00.html
40 CFR 93.111	Determining Conformity Of Federal Actions To State or Federal Implementation Plans. Criteria and procedures: Latest emissions model.		http://www.access.gpo.gov/nara/cfr/waisidx_00/40cfr93_00.html
December 27, 2000 Federal Register Notice, 65 FR 82228-82238	Standards for Defining Metropolitan and Micropolitan Statistical Areas; Notice		http://www.census.gov/population/www/estimates/notice001227.html
PL-105-178, Section 1210	Transportation Equity Act for the 21st Century (Section on Advanced Travel Forecasting Procedures Program)		http://www.fhwa.dot.gov/tea21/h240subb.htm#1210

3.0 The Variables / Data Items

Typically, the transportation planning activity draws upon a complex body of data, of which census data constitutes only one part. The processes used are based on the ability to understand and model human behavior and policy directives, while providing an output that can satisfy the regulations. Therefore, just as human behavior and policies are evolving, so are planning models. In short, the transportation planning models have yet to reach their data optimum. More, not less, data are needed if the transportation community is to continue to meet its legislative and regulatory requirements.

The JTW information collected on the long form/ACS has been used for several decades. The development and specific uses of the data from the JTW questions are well documented in a series of reports, conference proceeding and papers. Many of these documents are identified in the annotated reference section at the end of this report. Exhibit 2 lists the major long form/ACS variables that are routinely used.

Exhibit 2: Census Data Items Used in Transportation Planning and Programming Processes

Journey to Work and Mobility Questions	Demographic Variables
Place of Work	Sex
Travel Mode to Work	Age
Vehicle Occupancy	Race
Travel Time to Work	National Origin
Time Left for Work (or Time Arrived)	Citizenship
Number of Vehicles in Household	Education
Disability status affecting employment	Building Type
	Employment Status
	Employer Industry
	Employee Occupation
	Worker Income
	Household Income

4.0 The Users and Uses

There are three basic groups of users that this paper addresses:

1. U.S. Department of Transportation (USDOT),
2. State Departments of Transportation (DOTs) and Metropolitan Planning Organizations (MPOs), and
3. Transit agencies and others.

4.1 U.S. Department of Transportation (USDOT)

USDOT ties into the long form/ACS data in three general ways.

- As a statistical basis for setting program requirements and funding apportionment
- As a resource of "benchmark" data for program oversight and evaluation
- As a demographic and mobility database supporting policy and program development

4.1.1 Program Requirements and Fund Apportionment

At the Federal level population counts are used primarily for fund apportionment and generally for some smaller programs. Several of the USDOT programs that rely on CB population counts include the Surface Transportation Program (23 U.S.C. 134), Transit Planning and Research Program (49 U.S.C. 5303), Airport Improvement Program (PL-106-181, Section 104), State Highway Safety Grants (PL 105-178, Section 402), Alcohol Program Incentive Grants (23 U.S.C. 163), and Congestion Mitigation and Air Quality Improvement Grant Program (23 U.S.C. 104(b)(2)).

Nationally, the definition of Metropolitan Areas (MA's) is based, in part, on commuting patterns at the county level as established from the JTW question (December 27, 2000 Federal Register Notice, 65 FR 82228-82238). Further, Urbanized Area (UA) boundaries are based largely on population density, and are used by Federal Highway Administration (FHWA) and Federal Transit Administration (FTA) to allocate Surface Transportation Program (STP) planning funds.

4.1.2 Program Oversight and Evaluation

USDOT works in partnership with States and local governments to assess project/corridor-level impacts of implemented plans, programs, and specific projects. In supporting TEA-21 and the Clean Air Act Amendments of 1990, and other Federal legislation such as the National Environmental Protection Act (NEPA), Title VI of the Civil Rights Act of 1964, and the Highway Safety Act (23 U.S.C. 402 (a)), the USDOT

has come to rely heavily on the long form/ACS as a consistent, high-quality nation-wide source of data.

Small area demographic data has a special purpose because it is required to assess the potential impacts of proposed projects, and their alternatives. Detailed information is required on the age, race, and income characteristics of individuals likely to be affected, either directly or indirectly, by program initiatives. These program initiatives come in the form of accessible transit and equitable plans. Both residential and non-residential-based information is obtained from census data to support these efforts.

4.1.3 Policy and Program Development

Understanding current travel behavior is an important step towards revising existing transportation policies or developing new ones. Household characteristics and JTW data from decennial censuses have been used to assess the overall impact of past policies. For example, US DOT has extensively used JTW data to:

1. Analyze impact of welfare to work initiatives.
2. Assess viability and effectiveness of travel demand management strategies to alleviate congestion.
3. Develop an understanding of emerging commuting patterns such as the increasing suburban-suburban worker flows.

New working conditions and new kinds of jobs are changing the way we travel to work. While there are greater opportunities to use telecommunications to work from home, or from neighborhood telecommute centers, these changes may generate other situations where fewer work trips are made over very long distances, e.g. going to work only twice a week, but traveling 60 miles each way.

4.2 States and Metropolitan Planning Organizations (MPOs)

Census data provides the benchmark, and base year demographics needed in state-wide, and regional planning studies. State Departments of Transportation and MPOs need to know where people live, where people work, and how and when people commute from home-to-work, and work-to-home. They also need to know how, where, and when people shop, use recreation facilities, and go to school. While they have to depend on their own household travel surveys for a portion of this travel, the JTW data along with its demographics are used as the backbone for factoring, adjusting, and benchmarking their work. The cost efficiency of this approach in the transportation field has been well documented and understood. The planning requirements that these agencies work under are called for by Congress (23 USC 134 and 49 USC 5303) and reinforced in regulation (23 CFR 450.316-322).

To satisfy the federal laws and regulations cited throughout this report, State DOTs and MPOs use the JTW questions in three basic ways;

- Model development and long range planning
- Programming support (TIP Conformity)
- Special studies and descriptive analysis

4.2.1 Model Development and Long Range Planning

The beginning of the “3C” planning process dates back to the Federal-Aid Highway Act of 1962. This Act called for a regional process that was Continuing, Comprehensive and Cooperative. Under the “3C” process, the then Federal Bureau of Public Roads carried out a broad program to develop technical planning procedures for use in urbanized areas. With the support of the federal agencies these procedures have, over time, developed into a complex series of mathematical models that replicate an area's current travel behavior and then forecast that behavior into the future.

One purpose of the travel forecasting or travel demand modeling process is to replicate peoples’ travel by when, where, time of day, purpose and means of transportation (mode). By applying these models, planners can evaluate different alternatives, e.g. evaluating congestion alleviation effects of additional carpool lanes along a highway, and assessing alternatives such as rail line additions, new expressway additions, etc.

In the development and use of these models, JTW data and many of the demographic variables have direct applicability. In the bibliography at the end of this report a series of conference proceedings and papers are listed that document the direct uses of these variables. Of particular interest here is reference 3, the "Transportation Planner's Handbook on Conversion Factors for the Use of Census Data." Over time, the census variables derived from the long form/ACS have developed into one of the best and, for many areas, the only source of data.

The travel forecasting models are used for a variety of different planning and programming activities. One Federally mandated activity where the models are used is in the development of an area's Long Range Transportation Plan (LRTP). Under Federal law (23 U.S.C. Section 134) each metropolitan area over 50,000 must prepare a LRTP and a program of projects known as the Transportation Improvement Program (TIP). The LRTP is further specified in regulation to address at least a twenty-year planning horizon (23 CFR 450.316-322). In addition, it must address the impacts of the plans, policies, and programs contained in it on individual population segments (Title VI of the Civil Rights Act of 1964, as amended; Executive Order 12898 on Environmental Justice, DOT Order 5610.2, and FHWA Order 6640.23). Federal law also mandates that comprehensive transportation planning be carried out by the states (23 U.S.C. Section 135).

In support of the travel forecasting processes coupled with a need to develop more sophisticated models capable of addressing the current air quality and planning issues

(e.g. congestion), Congress allocated $25 million for the development of a new travel demand modeling tool known as TRANSIMS (PL 105-178, Section 1210). TRANSIMS is a micro-simulation model and relies heavily on the JTW and other data from the long form/ACS specifically in the form of the Public Use Micro Series.

4.2.2 Clean Air Act, TIP Conformity and Programming Support.

In 1990 with the passage of the Clean Air Act Amendments (CAAA) Congress tied the spending of highway and transit dollars directly to the air quality impacts they would have on their regions and states. Under the metropolitan planning requirements of Titles 23 and 49 U.S.C., projects cannot be approved, funded, advanced through the planning process, or implemented unless those projects are in a fiscally constrained and conforming transportation plan, and **transportation improvement plan**.

The Transportation Improvement Plan (TIP) includes the list of projects to be constructed over a three-year time frame. The LRTP contains the regionally significant projects with a 20-year horizon while the TIP is a short-term detailed list of projects. There are approximately 150 regions nationwide that must conform their TIP. For a TIP to conform, its impact on air quality must be analyzed. To perform the analyses, CAA regulations mandate the use of the most recent emission estimation models. The emission estimation model uses vehicle miles traveled and other outputs derived from the transportation travel demand models to estimate the pollution burden of constructing projects in the plan. 40 CFR 93.111 states in part:

> "The conformity determination must be based on the latest emission estimation model available. This criterion is satisfied if the most current version of the motor vehicle emissions model specified by EPA for use in the preparation or revision of implementation plans in that State or area is used for the conformity analysis."

As noted earlier, JTW data is one of the foundation elements used in the construction of the Travel Demand Models.

TEA-21 (PL 105-78) requires the planning process to give much greater consideration to the social, economic, and environmental effects, including air quality effects of transportation plans and programs. These requirements stem from Title VI of the Civil Rights Act of 1964, and are further advanced by Executive Order 12898 on Environmental Justice, DOT Order 5610.2, and FHWA Order 6640.23. Small area demographic data by travel characteristics are required to do the analysis required by these orders. The long form/ACS data are critical "legal" sources of such data.

4.2.3 Special Studies and Descriptive Analysis

The importance of JTW data for special studies and descriptive analysis needs special emphasis. The potential for continually updated data on the JTW and mobility data from the ACS will provide continuity from 1960, 1970, 1980, 1990 and 2000. Building these longer trends provides a stronger database for forecasting, assessing work trip flows, transit studies, vehicle occupancy studies, employment concentration studies, models to estimate survey response rates, highway corridor studies, examination of congestion, intercity job accessibility studies, bicycle studies etc.

JTW data has also been extensively used by the academic community. For example, the CTPP has been used for studying the use of the downtown circulatory system, average vehicle occupancy, and analysis of employment concentrations in the Chicago area. Applications such as these and many others can be found in "Decennial Census Data for Transportation Planning: Case Studies and Strategies for 2000. Volumes 1, Conference Proceedings 13." (Refer to the bibliography section for a synopsis of this publication.) The availability of JTW data has fueled research in several institutions across the country, and has resulted in several theses and dissertations attempting to describe, and provide alternate methods for modeling our travel behavior.

4.3 Transit Agencies

Since 1993, the FTA has provided over $37 billion in grants to States, MPOs and transit agencies. Before FTA may award a Federal grant, the grant applicant must provide to FTA all certifications and assurances required of the applicant--or in regard to the applicant's project--by Federal laws and regulations. Federal transit law is codified in chapter 53 of Title 49, United States Code.

Listed below are the citations within Chapter 53 of Title 49 as well as those within TEA-21; the Clean Air Act, as amended, 42 U.S.C. 7401 et seq.; Title VI of the Civil Rights Act; Section 504 of the Rehabilitation Act of 1973, as amended; and the Americans with Disabilities Act of 1990 (ADA) that are the basis for the certifications and assurances that FTA requires of its grant applicants. **The certifications and assurances that rely on Census Journey to Work information are noted.**

Subject	Citation	Requirements that Rely on U.S. Census Journey to Work Information
49 U.S.C.		
Metropolitan Planning Program	Section 5303	The MPO must comply with applicable requirements of the Clean Air Act, as amended, and implementing regulations, particularly with respect to coordination and conformity. (See Clean Air Act.)
Urbanized Area Formula Program	Section 5307	
Clean Fuels Formula Program	Section 5308	
Capital Investment Grants and Loans	Section 5309	Section 5309(e)(1)(B) requires that projects proposed for New Starts funding be justified based on a comprehensive review of the following criteria**: Mobility Improvements, Environmental Benefits,** Operating Efficiencies Cost Effectiveness; Section 5309(e)(3)(C) requires FTA to further consider mass transit-supportive land use policies and future patterns; subsequently, FTA added the following criteria: **Transit Supportive Existing Land Use and Future Patterns.**

49 U.S.C.		
Elderly and Persons with Disabilities Program	Section 5310	Recipients of FTA funds must make special efforts **in planning and designing transit service and facilities to ensure that transit can be used by elderly persons and individuals with disabilities**.
Formula Grants for Other Than Urbanized Areas	Section 5311	
State Planning and Research Program	Section 5313(b)	
Nondiscrimination-Civil Rights Requirements	Section 5332(c)	Under this provision, the Secretary of Transportation is required to take affirmative action **to ensure that no person on the basis of race, color, creed, national origin, sex or age, shall be excluded from participation in, be denied the benefits of, or be subject to discrimination under any project, program, or activity funded in whole or in part by FTA under 5301 of 49 U.S.C.** This provision applies to employment and business opportunities and imposes additional requirements to those provisions of Title VI.
Transit Employee Protective Arrangements	Section 5333(b)	
National Transit Database	Section 5335	

TEA-21		
Jobs Access and Reverse Commute Program	TEA-21, Section 3037	In areas of between 50,000 and 200,000 and those of greater than 200,000 in population, the type of plan to be submitted is called the Area-Wide Job Access and Reverse Commute Plan. This plan must: **1)Identify the geographic distributions of welfare recipients and low-income people in the region;** **2)Identify the geographic distributions of employment centers and employment-related activities in the region;** **3)Identify existing public, private, non-profit and human service transportation services in the region;** **4)Identify transportation gaps between the geographic distributions of people, as specified in section "1)," and employment, as specified in section "2)," which are not currently served by the transportation services specified in section "3.")**
Over the Road Accessibility Program	TEA-21, Section 3038	
Transportation and Community and System Preservation Pilot Program	TEA-21, Section 1221	

Clean Air Act of 1990		
See Metropolitan Planning Program above	42 U.S.C. 7401 et seq.	By January 1, 1997, estimates of regional transportation-related emissions used to support conformity determinations must be made at a minimum **using network-based travel models** according to procedures and methods that are available and in practice and supported by current and available documentation. Network-based travel models must at a minimum satisfy the following requirements: (i) Model forecasts must be analyzed for reasonableness and compared **to historical trends** and other factors, and the results must be documented; (ii) **Land use, population, employment, and other network-based travel model assumptions** must be documented and based on the best available information; (iii) Scenarios of land development and use must be consistent with the future transportation system alternatives for which emissions are being estimated. **The distribution of employment and residences** for different transportation options must be reasonable; (iv) A capacity-sensitive assignment methodology must be used, and emissions estimates must be based on a methodology which differentiates between **peak and off-peak** link volumes and speeds and uses speeds based on final assigned volumes; (v) **Zone-to-zone travel** impedances used to distribute trips between origin and destination pairs must be in reasonable agreement with the travel times that are estimated from final assigned traffic volumes. Where use of transit currently is anticipated to be a significant factor in satisfying transportation demand, these times should also be used for modeling mode splits; and (vi) Network-based travel models must be reasonably sensitive to changes in the time(s), cost(s), and other factors affecting travel choices.

Civil Rights Act of 1964, 42 U.S.C. Section 2000d, et. seq.		
	Title VI	Grant applicants in areas 200,000 and over in **population must submit program-specific information such as maps/overlays showing bus routes and distribution of minority persons by census tracts, and policy relating to service standards, that is, bus assignments, headways, etc.**
	Executive Order 12898	Federal Actions to Address Environmental Justice in Minority Populations and Low-income Populations
	DOT Order 5610.2	DOT Order To Address Environmental Justice in Minority Populations and Low-Income Populations
Americans with Disabilities Act of 1990 (ADA), 42 U.S.C. Section 12101, et. seq.		
	Titles II and III and DOT Implementing Regulations, 49 CFR Part 37	The ADA prohibits discrimination against an individual with a disability in connection with the provision of transportation services, including entities **providing fixed-route service to provide complementary paratransit service to people with disabilities who cannot used fixed route service.**
Rehabilitation Act of 1973, as amended - 29 U.S.C. Section 794		
	Section 504	Section 504 prohibits discrimination on the basis of disability in employment and services by recipients of Federal financial assistance.

3.0 Conclusion

The JTW questions asked on the long form/ACS have a long history of use by the transportation community. While there are no federal laws that mandate the CB to collect and provide the data used, the CB data has evolved into the best and in many cases the only source of information for meeting federal planning requirements. This information, specifically the JTW questions, have become the backbone of the transportation planning and programming processes that must meet congressional mandates and federal regulations. The importance of the JTW data in processes cannot be stressed enough.

Within the context of the Federal transportation program there are hundreds of decisions on how and where federal money is spent. Of the $217 billion authorized by TEA 21 (PL 105-178), approximately 79 percent is targeted for the Federal-Aid Highway program that is programmed by and through the states and local agencies. For the states and local agencies to program these funds, they have to satisfy specific laws and regulations.

To satisfy the laws identified in this report, agencies must have technical planning processes. These processes are built upon sound data for small geographic areas. The JTW questions on the long form/ACS provide the small area data elements that are critical building blocks in this process. Thus, the long form/ACS provides unparalleled inputs that support "transportation, and advancing America's economic growth and competitiveness domestically and internationally through efficient and flexible transportation." (From TEA 21 summary - http://www.fhwa.dot.gov/tea21/sumover.htm)

Although the JTW data is not "mandated" to be collected by the CB, a strong case can be made that the data are "required." This was true for the 2000 Census and it has not changed.

Bibliography

This bibliography contains citations for major reports, and some selected papers. Citations are categorized into reports and selected papers, and arranged in chronological order.

Reports:

1. ***"Decennial Census Data for Transportation Planning: Case Studies and Strategies for 2000. Volume 1, Conference Proceedings 13."*** Transportation Research Board. National Research Council, Washington, D.C., July 1997.

The proceedings document a second conference on Census 2000 Data for Transportation Planning. Over hundred transportation planners from local metropolitan planning organizations attended the conference. The objectives were:

a. To assess the uses of 1990 census data, including case studies of applications by large, small, and medium sized MPOs.
b. Assess alternate data collection options if Census 2000 did not include items needed by transportation planners.
c. Develop an action agenda for federal, state, and regional agencies.

This volume documents summaries of 1990 census data uses from a federal, state, local governments' perspective and highlights the value of the census data.

2. ***"Decennial Census Data for Transportation Planning: Case Studies and Strategies for 2000. Volume 2, Conference Proceedings 13."*** Transportation Research Board. National Research Council, Washington, D.C., July 1997.

The proceedings document a second conference on Census 2000 Data for Transportation Planning. This volume documents nineteen case studies using CTPP data for transportation planning applications by six large metropolitan governments, two transit agencies, three private sector organizations, five small metropolitan governments, and three State Departments of Transportation.

3. ***"Transportation Planner's Handbook on Conversion Factors for the Use of Census Data."*** Federal Highway Administration, Publication No - FHWA-PD-96-030, US Department of Transportation, Washington D.C., May 1996.

This handbook provides technical assistance to transportation planners in using the 1990 Census Data to develop and calibrate local travel demand models.

4. ***"Implications of Continuous Measurement for the Uses of Census Data in Transportation Planning."*** Bureau of Transportation Statistics, U.S. Department of Transportation, April 1996.

This report presents findings of a study on the impacts of Continuous Measurement on state and metropolitan transportation planning organizations. A panel of seven experts assess the implications of Continuous Measurement.

5. ***"Commuting in America II."*** Pisarski, Alan E. Eno Foundation, INC., 1996.

This report analyzes commuting patterns and trends in the United States using the 1990 CTPP. Its paints a broad picture of how and why Americans moved in their daily activities over a decade (1980-1990).

6. ***"Census Transportation Planning Package; Urban Element Technical Assistance, Course Workbook for CTPP Training Class."*** JHK and Associates. Prepared for U.S. Department of Transportation by JHK and Associates. 1996.

This handbook is designed for technical staff as an instructional guide to the 1990 Census Transportation Planning Package (CTPP) and its potential uses. The handbook gives an overview of the CTPP, and includes discussions on the basic Census definitions, and the CTPP organization into tables and parts. Users are oriented in preparing to use CTPP, the potential of the data, conducting reasonableness checks, using CTPP in Travel Models and other planning applications.

7. ***"Decennial Census Data for Transportation Planning: Conference Proceedings 4."*** Transportation Research Board. National Research Council, Washington, D.C., 1995.

The proceedings document a conference on Census 2000 Data for Transportation Planning held from March 13-16, 1994 at Irvine, California. Over one hundred transportation planners from local metropolitan planning organizations attended the conference. The objective was to assess the uses of 1990 census data; including case studies of applications by large, small, and medium sized MPOs in highway, and transit planning applications.

8. ***"Census Mapbook for Transportation Planning."*** Federal Highway Administration. U.S. Department of Transportation Washington, D.C. Publication Number FHWA-PL-94-035, December 1994.

Geographic Display of Census Data in transportation planning and policy decisions are compiled in this report. The report contains 49 maps depicting the use of Census data in applications such as travel demand model development, and model validation, population forecasting, corridor analysis, and transit route planning. Different planning agencies such as State Departments of Transportation, Metropolitan Planning Organizations, transit agencies, and others contributed in the map compilation.

9. ***"Journey-to-Work Trends in the United States and its Major Metropolitan Areas 1960-1990."*** Federal Highway Administration. U.S. Department of Transportation, Publication Number FHWA-PL-94-012, November 1993.

This report identifies changes between 1960 to 1990 in population and demographics, worker characteristics, travel to work, household vehicle availability, and geographic revisions in the United States and its large metropolitan areas. The report is based on Census Data from decennial data sets.

10. ***"Journey-to-Work Trends; Based on 1960, 1970 and 1980 Decennial Censuses."*** Federal Highway Administration. U.S. Department of Transportation, July 1986.

11. ***"Proceedings of the National Conference on Decennial Census Data for Transportation Planning: Special Report 206."*** Transportation Research Board. National Research Council, Washington, D.C., 1985.

12. ***"Census Data and Urban Transportation Planning: Special Report 145."*** Transportation Research Board. National Research Council, Washington, D.C., 1974.

13. ***"Census Data in Urban Transportation Planning: Special Report 121."*** Transportation Research Board. National Research Council, Washington, D.C., 1971.

14. ***"Journey-to-work Trends in the Delaware Valley Region, 1970-90."*** Delaware Valley Regional Planning Commission. Direction 2020 Report 5 Philadelphia, March 1994.

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