

Challenges of Conducting Surveys for Activity-Based Travel Demand Models”

**Case Study:
Establishment Survey at NYMTC**

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Outline

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 - Collecting Data
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Introduction

Why Travel Survey ?

Travel Surveys

Household travel survey

External travel survey

Workplace/Establishment
travel survey

Stated preferences survey

Hotel / visitor survey

Travel Demand Model

4 Step Model

Activity Based Model



A model can not be
more accurate than
its input data

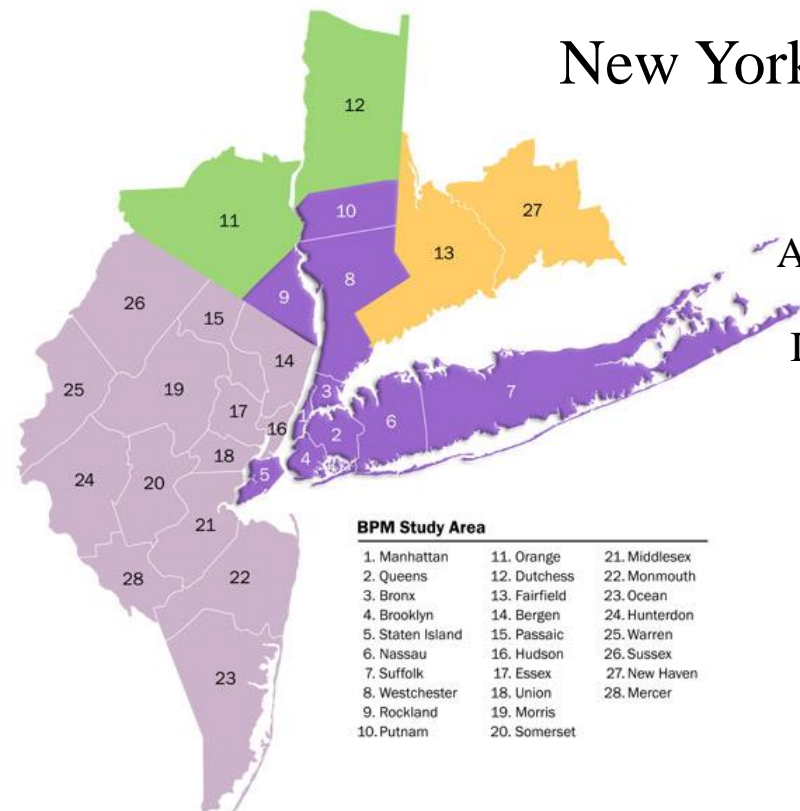
Introduction (Cont.)

Travel Demand Model by NYMTC

New York Best Practice Model (NYBPM)

Activity Based Model

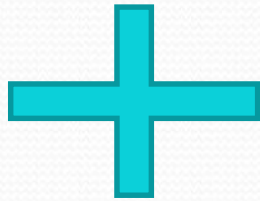
Implemented in 2001



Introduction (Cont.)

Travel Surveys Conducted by NYMTC

- Household travel survey (1997-1998)
- Household travel survey (2010-2011)

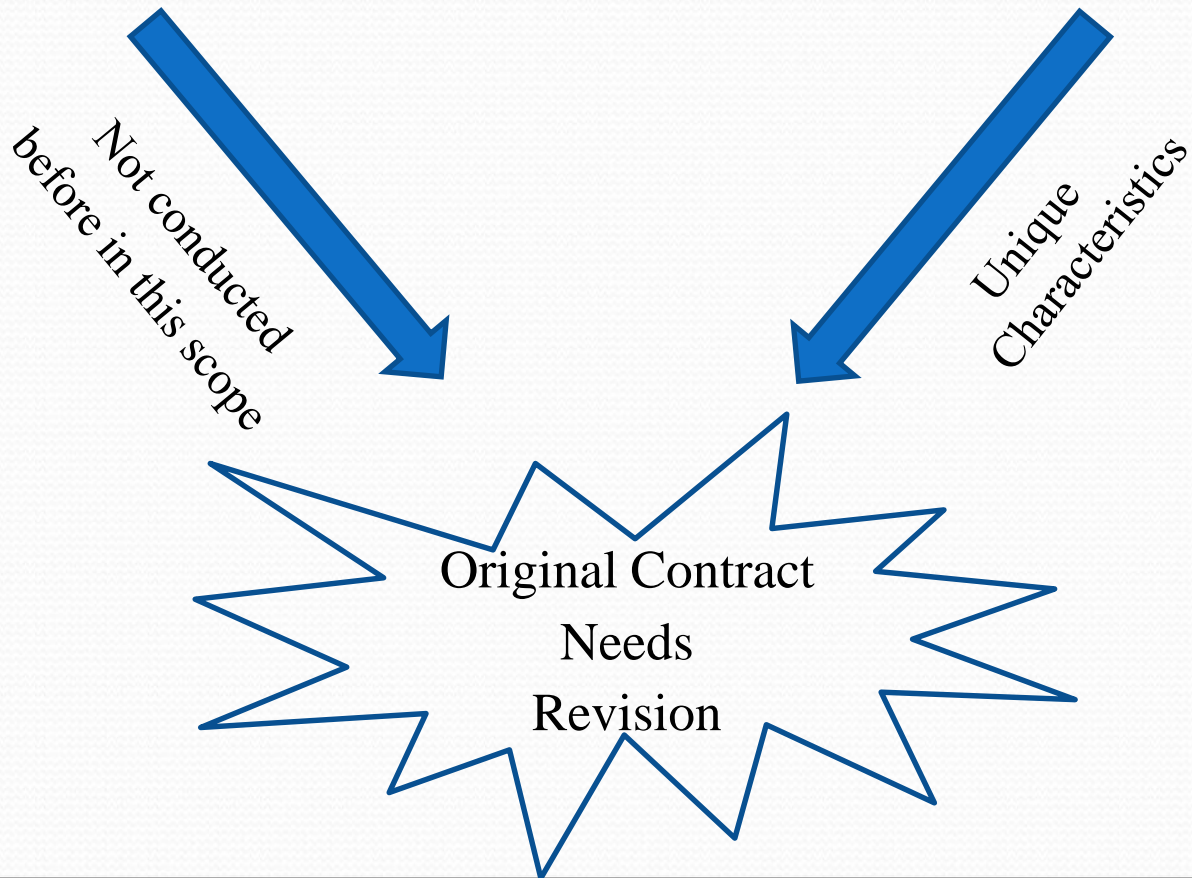


- Establishment Survey (ongoing)
 - Hotel/Visitor survey

Problem Definition

Establishment Survey

New York Area



Solution Procedure – Survey of other MPOs

Contacting Other MPOs to Determine
How They Conduct/Manage their Travel Surveys

- Design the Questionnaire
- Selecting MPOs
- Collecting Data
- Analyzing Data

Design the Questionnaire

Travel Survey's Details Conducted by/for the MPO

Survey Time(s)	Survey Types	Start mm/yy	End mm/yy	Notes	
1 For each of these survey types, please record the start and end dates for the most recent ones from design stage to completion (designing the questionnaire, pilot test, main survey, and final report)	Household Travel				
	Workplace/Establishment				
	Origin Destination				
	Truck & Commercial Veh.				
2 Did you combine these surveys together or conduct each survey and the corresponding meetings separately?		Yes	No		
		<input type="checkbox"/>	<input type="checkbox"/>		
3 Survey Size and Cost How many survey samples were collected for each of these surveys? How many completed samples were obtained? How much it cost per sample?	Survey Types	# of samples collected	# of completed samples	Cost per sample (\$)	
	Household Travel				
	Workplace/Establishment				
	Origin Destination				
	Truck & Commercial Veh.				
3 Number and cost of meetings and reports	Survey Types	# of meetings	Cost of each meeting	# of reports	cost of draft and final reports
	Household Travel				
	Workplace/Establishment				
	Origin Destination				
	Truck & Commercial Veh.				
Please attach the documentations for these surveys including budgeting or paste the web link for us to access/download/view.	Email Attachment <input type="checkbox"/>				
	Here is the web link:				
Advisory Committees		Yes	No		
Did you have any advisory committees?		<input type="checkbox"/>	<input type="checkbox"/>		
4 If yes, is there more than one committee?		<input type="checkbox"/>	<input type="checkbox"/>		
	If yes, did you combine the meetings? (or they were held separately)	<input type="checkbox"/>	<input type="checkbox"/>		
	Please specify the committees:				
Specify Responsibilities					
5 What part of data collection was done by MPO?					
	What part of data collection was done by consultant?				

Resources	Work Types	Household Travel	Workplace/Estab- lishment	Origin Destination
6 How many staff-hours were needed for? (if break down was generated)	Administrative for MPO			
	Administrative for Consultant			
	Field work (Interviewing)			
	Committee members			
	Analyzing data & documentations			
Incentives	Survey Types	Yes	No	If Yes, what types of incentive and how much?
7 Did you provide incentives for any of these surveys?	Household Travel	<input type="checkbox"/>	<input type="checkbox"/>	
	Workplace/Establishment	<input type="checkbox"/>	<input type="checkbox"/>	
	Origin Destination	<input type="checkbox"/>	<input type="checkbox"/>	
	Truck & Commercial Veh.	<input type="checkbox"/>	<input type="checkbox"/>	
What travel data are you collecting from respondents for use in the travel model?				
8 How long did an interview take?				
What survey instruments/methods were used to collect the data?		Intercept with tablet or paper	Self-reporting by paper or internet	Other instrument/methods (please specify)
9	Household Travel	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Workplace/Establishment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Origin Destination	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Truck and Commercial Veh.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Other, spicify:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Did the survey instrument vary by establishment size? (i.e. small, medium, large)		Yes <input type="checkbox"/>	No <input type="checkbox"/>	
Survey Types	Sample Size	Study area total population	Study area total employments	Study area total establishments
10	Household Travel			
	Workplace/Establishment			
	Origin Destination			
	Truck and Commercial Veh.			
Did you go beyond the MPO region area boundry for survey?		Yes <input type="checkbox"/>	No <input type="checkbox"/>	
If yes, what was the ratio of the area considered in survey to the MPO region area?				
Lessons learned from the these surveys (please provide documentation or describe here)				
11 Any suggestion on how to decrease the time spent interviewing each respondent?				

Selecting MPOs

	Metropolitan Planning Organization	Major City	Area (Sq. Miles)	Population 2010	Using ABM	Recruited (1)/ non-responsive (0)	Replied
1	Southern California Association of Governments (SCAG)	Los Angeles	38,649	18,051,203	yes	1	yes
2	New York Metropolitan Transportation Council (NYMTC)	<i>New York</i>	2,726	12,367,508	yes	--	--
3	The Chicago Metropolitan Agency for Planning (CMAP)	Chicago	4,096	8,444,660	yes	1	yes
4	Metropolitan Transportation Commission (MTC)	Oakland	7,485	7,150,828	yes	1	yes
5	North Jersey Transportation Planning Authority (NJTPA)	Newark	4,409	6,579,801	yes	1	yes
6	North Central Texas COG (NCTCOG)	Arlington	9,448	6,417,630	yes	1	yes
7	Houston-Galveston Area Council (H-GAC)	Houston	8,466	5,892,002	?/y	1	partial
8	Delaware Valley Regional Planning Commission (DVRPC)	Philadelphia	3,811	5,626,318	yes	1	yes
9	Atlanta Regional Commission (ARC)	Atlanta	4,573	4,819,026	yes	1	yes
10	Southeast Michigan COG (SEMCOG)	Detroit	4,608	4,703,593	no	--	--
11	National Capital Region Transportation Planning Board (TPB) MWCOG	Washington	3,558	4,586,770	no	--	--
12	Maricopa Association of Governments (MAG)	Phoenix	10,660	4,055,281	yes	1	no
13	Puget Sound Regional Council (PSRC)	Seattle	6,384	3,690,866	yes	1	yes
15	San Diego Association of Governments	San Diego	4260	3095271	yes	1	yes
16	Metropolitan Council	St. Paul	2,970	2,849,557	yes	1	yes
17	Denver Regional COG (DRCOG)	Denver	3,605	2,827,082	yes	1	no
18	Baltimore Regional Transportation Board (BRTB)	Baltimore	2,403	2,684,661	yes	0	--
19	Southwestern Pennsylvania Commission (SPC)	Pittsburgh	7,110	2,574,953	no	--	--
20	East-West Gateway Council of Government (EWGCOG)	St. Louis	4,586	2,571,253	no	--	--
21	Sacramento Area COG (SACOG)	Sacramento	6,189	2,274,557	yes	0	--
22	Northeast Ohio Area wide Coordinating Agency (NOACA)	Cleveland	2006	2,071,325	?/y	0	--
23	Metro in Oregon	Portland	487	1,499,844	yes	1	yes
24	Mid Ohio Regional planning Commission (MORPC)	Columbus	1,132	1,426,183	yes	1	Yes
	Total				18	14	13

Analyzing Data

1- Comparing Household travel surveys

MPO	Year Started	Total Cost (\$)	Adjusted Total cost to year 2016 (\$)*	Total HH	Retrieved	Incentives/ total cost	Adjusted Nominal Costs (Cost per HH) (\$)*	Incentive per Retrieved HH (\$)	Response Rate**
NYMTC	2009	3,841,387	4,315,900	7,900,000	18,965	14%	227.6	\$31.5	61%
ARC									63%
CMAP									56%
DVRPC									45%
Caltrans									67%
SANDAG									68%
PSRC									83%
ODOT	2007	3,400,000	3,952,547	1,800,000	19,932		198.3		
Oregon	2008	800,000	895,623	282,042	4,799	5%	186.6	9.5	63%
Massachusetts	2010	3,100,000	3,426,724	2,547,075	15,033		227.9		59%
Met Council	2010	1,740,000	1,923,387	1,344,079	12,103		158.9		46%
Average		2,545,660	2,846,621	3,013,644	13,064	10%	195		60%

$$\frac{(\%14 - \%10) \times 3,841,387}{\$228} = \mathbf{674} \text{ more interviews}$$

* Calculated based on the "Consumer Price Index"

** the ratio of the number of retrieved households to the recruited households

Analyzing Data

1- Comparing Household travel surveys – Survey Tasks

Task	ARC	DVRPC-HTS-2012	PSRC-2014	SANDAG-HTS-2006	SANDAG-HTS-2016	NYMTC HHTS 2009
Project Management	1%	2%	5%	3%	5%	4%
Pilot Survey	18%	3%	11%	6%	13%	7%
Main Survey	63%	66%	22%	70%	62%	74%
Data processing , Validating	5%		8%	9%	5%	3%
Final Report & Data Files	2%	2%	9%	4%	5%	4%
Others	10%	26%	45%	8%	10%	8%
Total	100%	100%	100%	100%	100%	100%
Incentives		8%	11%			14%
Response Rate *	63%	45%	83%	68%		61%

* the ratio of the number of retrieved households to the recruited households

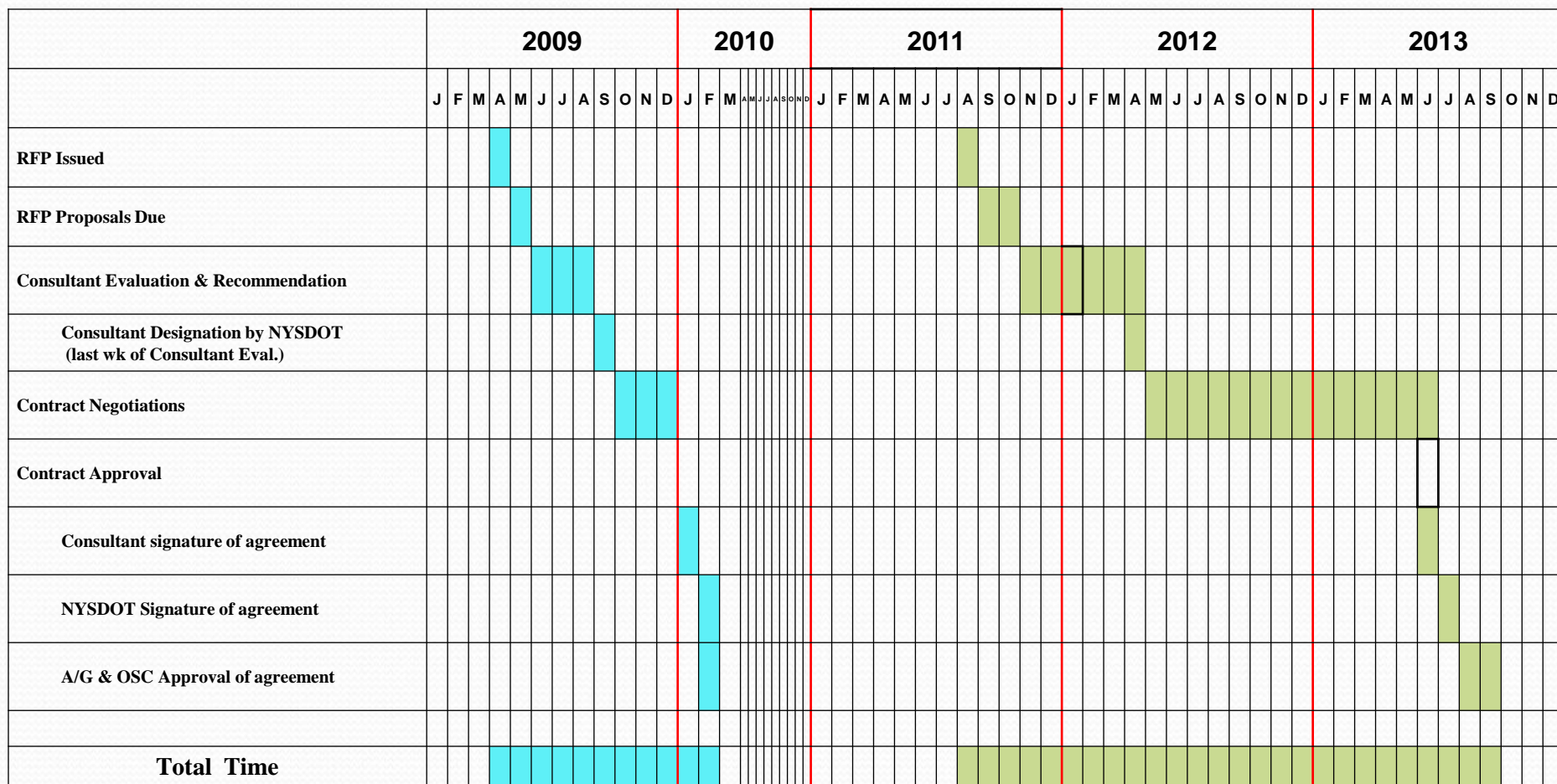
Analyzing Data

2-Comparing Establishment surveys – Comparing costs by task

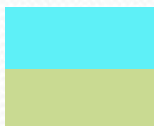
Tasks	Task Costs (\$)		Percentage Costs by Tasks (%)	
	SANDAG-Work-2016	NYMTC RES 2013	SANDAG-Work-2016	NYMTC RES 2013
Project Management	21,931	319,334	5%	13%
Survey design and Recruitment	122,343	938,459	29%	38%
Pretest	36,370	250,845	9%	10%
Main survey	133,045	597,555	32%	24%
Data processing , correcting , validating	20,155	90,737	5%	4%
Final report data files	20,765	89,178	5%	4%
Others	65,381	213,762	16%	9%
Total	419,990	2,499,870	100%	100%

Analyzing Data

3-Comparing the Projected and Actual Timetables for the RES Contractual Process



Projected Dates



Actual Dates



11 Months

26 Months

13

Recommendations for Future Travel surveys – for NYMTC

1. The survey must be conducted after the model is well structured.
2. The modeling team should decide about the sample size, as the Data Assessment Task costs a lot in the contract.
3. Some tasks can be accomplished in house ,
(such as administrative task and designing the survey)
4. Reconsidering the deliverable reports in the whole project. Some of them are repeated in different tasks.
5. Reconsidering the recruitment task , while it takes a high portion of the total cost
6. The pretest should be longer and more thorough
7. Consider other alternative to encourage people to participate the survey
8. Surveyors must be very fluent with tablets before they go out into the field and also have the skills to encourage people to **participate**



Thank You

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