

**IMPERIAL VALLEY TRANSIT  
ANNUAL PASSENGER MILE SAMPLING METHODOLOGY  
AND FINAL RESULTS  
JULY 1, 2013-JUNE 30, 2014**



**Prepared for:  
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**ICTC**

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**IMPERIAL VALLEY TRANSIT  
ANNUAL PASSENGER MILE SAMPLING METHODOLOGY  
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The County of Imperial provides fixed route bus service throughout the County through the services of Imperial Valley Transit, which was created in 1989. Imperial Valley Transit began as a 5 route system with 3 buses running Monday through Friday. The passenger ridership initially averaged approximately 3,000 passengers a month.

The transit service is operated as a turnkey operation by First Transit, Inc. The service is administrated and funded by the Imperial County Transportation Commission (ICTC). The Commission members represent each City, the County and the Imperial Irrigation District.

Funding is provided annually through the ICTC adopted Overall Work Program Budget and Finance Plan. The source of the funding includes but is not limited to federal FTA 5307, 5311 and 5317 funds, State Transportation Development Act (TDA) including Local Transportation (LTF) and State Transit Assistance (STA), and local fare revenue.

The Federal Register of September 25, 1987, specifies that certain operating data must be collected from federally funded transit systems as part of the Section 15 Uniform System of Accounts and Records and Reporting System. One such required set of data that is required is an annual estimate of unlinked passenger trips and passenger miles that is reliable with 95 percent confidence to a margin of error of +/- 10 percent. The Urban Mass Transportation Administration and Federal Transit Administration (FTA) developed several suggested sampling techniques for collecting annual estimates of unlinked passenger trips and passenger miles. A transit agency may use a technique other than the UMTA recommended techniques as long as it meets the prescribed precision and confidence levels.

ICTC contracted with Rea & Parker Research of San Diego, California to conduct the study that would require Rea & Parker Research personnel to ride randomly selected Imperial Valley Transit bus trips for a one year period that covered July 1, 2013-to-June 30, 2014. Rea & Parker Research had conducted the most recent passenger mile sampling studies for Imperial Valley Transit in 2010-2011 and 2008-2009.

Transit systems have been offered the opportunity to convert to a new method of sampling supported by the National Transit Database (NTD). This new method would likely result in fewer samples required but in a highly irregular schedule that could make the securing and retention of employees to conduct the requisite counts to be problematic. The decision was made to conduct this passenger mile estimate using the older, but still approved methodology. All individual bus trip data was tracked and recorded electronically in 2010-2011 and in 2013-2014 so that the new methodology could be considered in the future, when and if savings from fewer samples might be substantial enough to merit the change in methodology. At present, that is not the case.

The option was also available to devise a statistically valid method that differed from both the new and the established NTD methodologies. Rea & Parker Research elected to utilize the NTD methodology inasmuch as it is specifically designed to address small transit systems. As such, no determination of variance, standard deviation, margin of error, confidence levels or intervals was undertaken by Rea & Parker research independent of this established methodology. These statistics would have been required to develop a method of sampling unique to Imperial Valley Transit. Attached as an appendix to this report are the academic and professional consultative experiences of Richard A. Parker, Ph.D. and Louis M. Rea, Ph.D., the principal investigators and analysts for this study.

There were a number of increases in bus service that took place during the year. Initially, the number of daily trips and 6-day service indicated that for the 6 days per week that Imperial Valley Transit operated, two bus trips could be tallied every operating day for one year, or three trips every other day, 5 trips every third day, 8 trips every fourth day, 12 trips every fifth day or 19 trips every sixth day. The method chosen was for 5 trips to be sampled every third day—one week on Monday and Thursday, another week on Tuesday and Friday, and another week on Wednesday and Saturday.

On holidays when the buses were not operating, days of operation were exchanged among weeks. The FTA sample size macro for this initial period of July-through-September, 2013 is shown below. For example, if Thanksgiving Day were the scheduled Thursday, that week may have been rearranged with the Wednesday and Saturday pairing so that for those two weeks only, buses were sampled on Monday and Wednesday one week and Thursday and Saturday in the

previous or succeeding week. Missed trips, of which there were very few, were made up on the same day of the week as the missed trip during the succeeding week.

**INITIAL SAMPLING (July-September, 2013)**

**Sample Size Table**

**95 Percent Confidence Level @ Tolerance of 10 Percent**

**Number of Days Service Operated (m)**

<b>313</b>
<b>115</b>

**Number of One-Way Trips per Day (N)**

	Sampling Interval (Every _ Day)					
	1	2	3	4	5	6
<b>Trips/Day</b>	2	3	5	8	12	19
<b>Annual Trips</b>	626	468	520	624	744	988

In August, 2013, the number of daily bus trips increased very slightly and still for only six days. No change in the number of samples was required by this change. In October, 2013, the number of daily trips increased to 126, but also only for six days, again resulting in no change in the number of samples required. However, when the Gold Line opened in December, the number of daily trips increased to 138 and the number to be sampled increased to 6 every third day. This increase lasted only until January, 2014 when Sunday service was added, resulting in the following FTA sample size macro. After January, the number of sampled daily trips returned to 5, but this was to be performed every third day such that certain weeks had three sample days and others remained at two days. This new schedule held for the balance of the study.

In preparation for the commencement of the study, Rea & Parker Research entered each bus trip into an SPSS (Statistical Package for the Social Sciences) database as a code, indicating weekday, Saturday, and Sunday (starting in 2014), bus route number, and the number of the trip on that day. For example, after the October service increase, Route 1S on a weekday at 9:30am would have been coded and entered as 1s-06, the sixth Route 1s trip on weekdays and Saturday's 3:00 pm Route 2N would have been coded 2n-sat-07, the seventh Saturday Route 2N trip. Five trips were randomly selected by the SPSS program for counting every three days, with the exception of the two-week period in December, when 6 trips were selected every third day.

Certain buses run on some days per week but not on others. Still others curtail their trips when Imperial Valley College is not in session. Random selection of any bus that was not running on a given day caused a randomly selected replacement to be chosen.

**SAMPLING (January-June, 2014)**

**Sample Size Table**

**95 Percent Confidence Level @ Tolerance of 10 Percent**

**Number of Days Service Operated (m)**

**365**

**Number of One-Way Trips per Day (N)**

**138**

	Sampling Interval (Every _ Day)					
	1	2	3	4	5	6
<b>Trips/Day</b>	2	3	5	7	10	14
<b>Annual Trips</b>	730	546	605	637	730	840

One other variable required attention for this year’s study and that pertains to overflow buses that ran on occasion between July, 2013 and October, 2013, when service was increased. Imperial Valley Transit experiences considerable demand for boarding at the border in Calexico, and there are occasions when the existing Route 1N bus could not accommodate that demand. At such times Imperial Valley Transit dispatched another bus to absorb this overflow demand. The overflow bus was added to the list of bus routes and selected for sampling similar to all other routes. Inasmuch as it was not known if the overflow bus was going to be needed on any particular day, a sixth trip was selected randomly for backup when the overflow was selected for sampling. On days when the overflow was not part of the sample but was needed, Imperial Valley Transit notified Rea & Parker Research and that bus trip was added to the tally of trips run for that week.

On board personnel were given an assignment log (as depicted in the Exhibit A example) and trip sheets (Exhibit B example), as demonstrated on the succeeding pages. The assignment log provided specific instructions about where to board each bus, where and when to exit, and if that trip was one that was selected for sampling. If the trip was selected, trip sheets were attached

onto which the Rea & Parker Research counting employee on board was to record boardings and alightings, with some on-board counts between stops.

The Rea & Parker Research supervisor, who was based in the City of Imperial, collected and distributed these forms to the counting personnel and sent the manually completed forms twice per month to San Diego for data entry by Rea & Parker Research staff and math and logic checks by either Richard A. Parker, Ph.D. or Louis M. Rea, Ph.D. At that point in time, the manual information was entered electronically, the distance between stops was added to the forms, and the total number of passenger miles could be determined. A completed trip sheet (Exhibit C) also follows in the next pages of this report for illustrative purposes. These completed forms were then compiled into an Excel file that maintained a running balance of counts and mileage. A sample of that Excel file also follows (Exhibit D), and it is this format that can facilitate consideration of NTD alternative sampling for future analyses.

## Imperial Valley Transit Passenger Sampling Assignment Log (EXHIBIT A)

Assignment# <u>63a</u>	Employee: _____
DATE: <u>1-30-14</u>	Day of Week: <u>Thurs</u>

**SPECIAL INSTRUCTIONS FOR REPORTING/FINISHING IF OTHER THAN FIRST OR LAST STOP**

Reporting Time: \_\_\_\_\_ Reporting Place: \_\_\_\_\_  
 Finishing Time: \_\_\_\_\_ Finishing Place: \_\_\_\_\_

### On-Board Bus Schedule

Bus Route	Trip Serial #	Beginning Stop	Begin Stop Time	Last Stop	Last Stop Time	Bus Scheduled for Data Collection?	Special Instructions after Last Stop
1n	1n04	Calexico Hacienda	8:05a	El Centro State & 7th	9:20a	YES	Stay on bus? Verify with driver
2n	2n03	El Centro State & 7th	9:20a	Brawley E Street & Rio Vista	10:20a	YES	
2s		Brawley E Street & Rio Vista	10:25a	Imperial Valley College	11:10a	No	Board bus already on route and exit before end. 1+ hour break
21-IVC Express	21-IVC-pm01	Imperial Valley College	12:30p	Calexico Cole & 111	1:30p	YES	At gas station across from Denny's (west side of 111), you should signal southbound bus on 111 to stop at about 1:40p— then exit immediately at Hacienda at 1:45
1s		Calexico Cole & 111	1:40p	Calexico Hacienda	1:45p	No	

SURVEY TRIP SHEET—EXHIBIT B							# of Pages <u>1 of 2</u>	
(1) Trip Serial No. _____			(2) Date _____		(3) Day of Week _____		(4) Time Period _____	
(5) Route No. <u>1 north</u>			(6) Vehicle Inventory Number _____		(7) Total Capacity _____		(8) Seated Capacity _____	
(9)	(10)	(12)	(13)	(14)	(15)	(16)	(17)	
Stop No.	Stop Description	Odometer Reading	Passengers Boarded	Passengers De-Boarded	Passengers On Board	Distance Between Stops	Passenger Miles (15) x (16)	
1	Hacienda/Scaroni/Cole				0		0	
2	Hacienda/Ollie St.				0		0	
3	Ollie/Birch St. - Post Office				0		0	
4	Kloke St/Birch St/ Hwy 98				0		0	
5	Kloke St./Grant St.				0		0	
6	Grant St./Eady				0		0	
7	Grant St./Cesar Chavez St.				0		0	
8	Emerson/6th				0		0	
9	Third St./Paulin				0		0	
10	Mary/4th St.				0		0	
11	Encinas/7th (Church)				0		0	
12	Encinas/Belcher.(Library)				0		0	
13	Blair/Preston (Hospital/Clinic)				0		0	
14	Rockwood/Vega				0		0	
15	Rockwood/Robert Kennedy				0		0	
16	Cole Rd./Rockwood				0		0	
17	Cole/111				0		0	
0	(26) Capacity Miles (7) x (22)	Totals	0	0	0	0	0	
			(20)		(21)	(22)	(23)	
0	(27) Seat Miles (8) x (22)							



**SURVEY TRIP SHEET**

# of Pages 2 of 2

<b>(1) Trip Serial No.</b> _____			<b>(2) Date</b> _____		<b>(3) Day of Week</b> _____		<b>(4) Time Period</b> _____	
<b>(5) Route No.</b> <u>1 north</u>			<b>(6) Vehicle Inventory Number</b> _____		(7) Total Capacity _____		(8) Seated Capacity _____	
<b>(9)</b>	<b>(10)</b>	<b>(12)</b>	<b>(13)</b>	<b>(14)</b>	<b>(15)</b>	<b>(16)</b>	<b>(17)</b>	
<b>Stop No.</b>	<b>Stop Description</b>	<b>Odometer Reading</b>	<b>Passengers Boarded</b>	<b>Passengers De-Boarded</b>	<b>Passengers On Board</b>	<b>Distance Between Stops</b>	<b>Passenger Miles (15) x (16)</b>	
18	Heber/Pitzer				0		0	
19	Heber Post Office				0		0	
20	Heber Family Apts.				0		0	
21	Imperial Valley Mall				0		0	
22	4th St. / Wake St.				0		0	
23	Lucky's Market				0		0	
24	Aurora / 4th St.				0		0	
25	Aurora / 8th St.				0		0	
26	Aurora/14th				0		0	
27	Imperial Ave. / Pepper St.(Hospital)				0		0	
28	Ross St. / 10th St.				0		0	
29	4th St. / Wensley				0		0	
30	4th St. / Brighton				0		0	
31	State St. / 5th St.				0		0	
32	State St. / 7th St.				0		0	
0	(26) Capacity Miles (7) x (22)	Totals	0	0	0	0	0	
			(20)		(21)	(22)	(23)	
0	(27) Seat Miles (8) x (22)			Mean On Board	0			

**SURVEY TRIP SHEET**

# of Pages 1 of 2

<b>(1) Trip Serial No.</b> _____			<b>(2) Date</b> _____		<b>(3) Day of Week</b> _____		<b>(4) Time Period</b> _____	
<b>(5) Route No.</b> <u>2 north</u>			<b>(6) Vehicle Inventory Number</b> _____		(7) Total Capacity _____		(8) Seated Capacity _____	
<b>(9)</b>	<b>(10)</b>	<b>(12)</b>	<b>(13)</b>	<b>(14)</b>	<b>(15)</b>	<b>(16)</b>	<b>(17)</b>	
<b>Stop No.</b>	<b>Stop Description</b>	<b>Odometer Reading</b>	<b>Passengers Boarded</b>	<b>Passengers De-Boarded</b>	<b>Passengers On Board</b>	<b>Distance Between Stops</b>	<b>Passenger Miles (15) x (16)</b>	
1	State/7th				0		0	
2	State/8th				0		0	
3	State/14th				0		0	
4	Imperial/Commercial				0		0	
5	Imperial/Euclid				0		0	
6	Bradshaw/86 (Costco)				0		0	
7	La Brucherie/Bradshaw (WalM)				0		0	
8	Aten / La Brucherie				0		0	
9	Aten/Myrtle				0		0	
10	Aten / Cross				0		0	
11	Imperial Valley College				0		0	
12	Barioni Ave./K St. (IID)				0		0	
13	Imperial Post Office				0		0	
14	15th & Imperial				0		0	
15	Legion Rd. / Hwy 86 (Hospital)				0		0	
16	Brawley--K St./ 2nd St.				0		0	
0	(26) Capacity Miles (7) x (22)	Totals	0	0	0	0	0	
			(20)		(21)	(22)	(23)	
0	(27) Seat Miles (8) x (22)							

**SURVEY TRIP SHEET**

# of Pages 2 of 2

<b>(1) Trip Serial No.</b> _____		<b>(2) Date</b> _____		<b>(3) Day of Week</b> _____		<b>(4) Time Period</b> _____	
<b>(5) Route No.</b> <u>2 north</u>		<b>(6) Vehicle Inventory Number</b> _____		(7) Total Capacity _____		(8) Seated Capacity _____	
<b>(9)</b>	<b>(10)</b>	<b>(12)</b>	<b>(13)</b>	<b>(14)</b>	<b>(15)</b>	<b>(16)</b>	<b>(17)</b>
<b>Stop No.</b>	<b>Stop Description</b>	<b>Odometer Reading</b>	<b>Passengers Boarded</b>	<b>Passengers De-Boarded</b>	<b>Passengers On Board</b>	<b>Distance Between Stops</b>	<b>Passenger Miles (15) x (16)</b>
17	Brawley--K St./South Plaza				0		0
18	Brawley--K St./S. 9th				0		0
19	Brawley--K St./S. Palm St.				0		0
20	Brawley--Palm St. / J St.				0		0
21	Brawley--S. Main St. / Palm				0		0
22	Brawley--Main St. / 10th St.				0		0
23	Brawley--Main/3rd St.				0		0
24	Brawley--E St./Rio Vista				0		0
25	Westmorland--Center/Main				0		0
26	Westmorland--Center/6th				0		0
27	Calipatria--Main St. / Park				0		0
28	Calipatria--111/Main				0		0
29	Niland--111/Main				0		0
					0		0
0	(26) Capacity Miles (7) x (22)	Totals	0	0	0	0	0
			(20)		(21)	(22)	(23)
0	(27) Seat Miles (8) x (22)			Mean On Board	0		

SURVEY TRIP SHEET						# of Pages 1 of 1	
(1) Trip Serial No. _____		(2) Date _____		(3) Day of Week _____		(4) Time Period _____	
(5) Route No. 21-IVC Express-PM Calexico _____		(6) Vehicle Inventory Number _____		(7) Total Capacity _____		(8) Seated Capacity _____	
(9)	(10)	(12)	(13)	(14)	(15)	(16)	(17)
Stop No.	Stop Description	Odometer Reading	Passengers Boarded	Passengers De-Boarded	Passengers On Board	Distance Between Stops	Passenger Miles (15) x (16)
1	Imperial Valley College				0		0
2	Hacienda/Scaroni				0		0
3	Hacienda/Ollie St.				0		0
4	Ollie/Birch St. - Post Office				0		0
5	Kloke St/Birch St				0		0
6	Kloke St./Grant St.				0		0
7	Grant St./Eady				0		0
8	Grant St./Cesar Chavez St.				0		0
9	Emerson/6th				0		0
10	Third St./Paulin				0		0
11	Mary/4th St.				0		0
12	Encinas/7th St.(Library)				0		0
13	Blair/Preston (Hospital/Clinic)				0		0
14	Rockwood/Vega				0		0
15	Rockwood/Robert Kennedy				0		0
16	Cole Rd./Rockwood				0		0
17	Cole/111				0		0
0	(26) Capacity Miles (7) x (22)	Totals	0	0	0	0	0
			(20)		(21)	(22)	(23)
0	(27) Seat Miles (8) x (22)			Mean On Board	0		

SURVEY TRIP SHEET—EXHIBIT C						# of Pages 1 of 2	
(1) Trip Serial No. 1n04		(2) Date 1-30-14		(3) Day of Week Thurs		(4) Time Period AM	
(5) Route No. 1 north		(6) Vehicle Inventory Number 1209		(7) Total Capacity 75		(8) Seated Capacity 41	
(9)	(10)	(12)	(13)	(14)	(15)	(16)	(17)
Stop No.	Stop Description	Odometer Reading	Passengers Boarded	Passengers De-Boarded	Passengers On Board	Distance Between Stops	Passenger Miles (15) x (16)
1	Hacienda/Scaroni/Cole	77483.5	28		28	0.2	5.6
2	Hacienda/Ollie St.				28		0
3	Ollie/Birch St. - Post Office	77483.7	2		30	2.4	72
4	Kloke St/Birch St/ Hwy 98				30		0
5	Kloke St./Grant St.				30		0
6	Grant St./Eady				30		0
7	Grant St./Cesar Chavez St.				30		0
8	Emerson/6th	77486.1	10	2	38	0.3	11.4
9	Third St./Paulin	77486.4	17	18	37	0.4	14.8
10	Mary/4th St.	77486.8	1	2	36	0.4	14.4
11	Encinas/7th (Church)	77487.2	4	1	39	0.3	11.7
12	Encinas/Belcher.(Library)	77487.5	1	5	35	1.1	38.5
13	Blair/Preston (Hospital/Clinic)				35		0
14	Rockwood/Vega	77488.6	2	2	35	0.3	10.5
15	Rockwood/Robert Kennedy	77488.9	3	1	37	0.4	14.8
16	Cole Rd./Rockwood				37		0
17	Cole/111	77489.3	2	6	33	4.1	135.3
742.5	(26) Capacity Miles (7) x (22)	Totals	70	37	568	9.9	329
			(20)		(21)	(22)	(23)
405.9	(27) Seat Miles (8) x (22)						

**SURVEY TRIP SHEET**

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<b>(1) Trip Serial No.</b> <u>1n04</u>			<b>(2) Date</b> <u>1-30-14</u>		<b>(3) Day of Week</b> <u>Thurs</u>		<b>(4) Time Period</b> <u>AM</u>	
<b>(5) Route No.</b> <u>1 north</u>			<b>(6) Vehicle Inventory Number</b> <u>1209</u>		<b>(7) Total Capacity</b> <u>75</u>		<b>(8) Seated Capacity</b> <u>41</u>	
<b>(9)</b>	<b>(10)</b>	<b>(12)</b>	<b>(13)</b>	<b>(14)</b>	<b>(15)</b>	<b>(16)</b>	<b>(17)</b>	
<b>Stop No.</b>	<b>Stop Description</b>	<b>Odometer Reading</b>	<b>Passengers Boarded</b>	<b>Passengers De-Boarded</b>	<b>Passengers On Board</b>	<b>Distance Between Stops</b>	<b>Passenger Miles (15) x (16)</b>	
18	Heber/Pitzer	77493.4	1	2	32	0.2	6.4	
19	Heber Post Office	77493.6		8	24	3.6	86.4	
20	Heber Family Apts.				24		0	
21	Imperial Valley Mall	77497.2		3	21	1.9	39.9	
22	4th St. / Wake St.	77499.1		4	17	0.3	5.1	
23	Lucky's Market	77499.4	2	2	17	2	34	
24	Aurora / 4th St.				17		0	
25	Aurora / 8th St.				17		0	
26	Aurora/14th				17		0	
27	Imperial Ave. / Pepper St.(Hospital)				17		0	
28	Ross St. / 10th St.	77501.4	7	3	21	0.9	18.9	
29	4th St. / Wensley	77502.3	2	1	22	0.4	8.8	
30	4th St. / Brighton	77502.7	3	1	24	0.3	7.2	
31	State St. / 5th St.	77503	4	2	26	0.3	7.8	
32	State St. / 7th St.	77503.3		1	25		0	
33	State St / 14th St.				25		0	
1485	(26) Capacity Miles (7) x (22)	Totals	89	64	914	19.8	543.5	
811.8			(20)		(21)	(22)	(23)	

**SURVEY TRIP SHEET**

							<b># of Pages</b> <u>1 of 2</u>	
<b>(1) Trip Serial No.</b> <u>2n03</u>			<b>(2) Date</b> <u>1-30-14</u>		<b>(3) Day of Week</b> <u>Thurs</u>		<b>(4) Time Period</b> <u>Mid</u>	
<b>(5) Route No.</b> <u>2 north</u>			<b>(6) Vehicle Inventory Number</b> <u>1209</u>		<b>(7) Total Capacity</b> _____ 75		<b>(8) Seated Capacity</b> _____ 41	
<b>(9)</b>	<b>(10)</b>	<b>(12)</b>	<b>(13)</b>	<b>(14)</b>	<b>(15)</b>	<b>(16)</b>	<b>(17)</b>	
<b>Stop No.</b>	<b>Stop Description</b>	<b>Odometer Reading</b>	<b>Passengers Boarded</b>	<b>Passengers De-Boarded</b>	<b>Passengers On Board</b>	<b>Distance Between Stops</b>	<b>Passenger Miles (15) x (16)</b>	
1	State/14th	77503.3	17		17	0.6	10.2	
2	Imperial/Commercial	77503.9	2	2	17	0.2	3.4	
3	Imperial/Euclid	77504.1	5	3	19	1	19	
4	Bradshaw/86 (Costco)	77505.1	3	4	18	1.5	27	
5	La Brucherie/Bradshaw (WalM)				18		0	
6	Aten / La Brucherie	77506.6	1	3	16	4.8	76.8	
7	Aten/Myrtle				16		0	
8	Aten / Cross				16		0	
9	Imperial Valley College	77511.4		7	9	4.7	42.3	
10	Barioni Ave./K St. (IID)	77516.1	1	2	8	0.4	3.2	
11	Imperial Post Office	77516.5	3	1	10	8.7	87	
12	15th & Imperial				10		0	
13	Legion Rd. / Hwy 86 (Hospital)	77525.2	1	2	9	1.3	11.7	
14	Brawley--K St./ 2nd St.	77526.5		1	8	1.1	8.8	
15	Brawley--K St/Imperial Ave				8		0	
16	Brawley--K St./S. 9th				8		0	
1822.5	(26) Capacity Miles (7) x (22)	Totals	33	25	207	24.3	289.4	
996.3	(27) Seat Miles (8) x (22)							

**SURVEY TRIP SHEET**

							# of Pages <u>2 of 2</u>	
<b>(1) Trip Serial No.</b> <u>2n03</u>			<b>(2) Date</b> <u>1-30-14</u>		<b>(3) Day of Week</b> <u>Thurs</u>		<b>(4) Time Period</b> <u>Mid</u>	
<b>(5) Route No.</b> <u>2 north</u>			<b>(6) Vehicle Inventory Number</b> <u>1209</u>		<b>(7) Total Capacity</b> <u>75</u>		<b>(8) Seated Capacity</b> <u>41</u>	
<b>(9)</b>	<b>(10)</b>	<b>(12)</b>	<b>(13)</b>	<b>(14)</b>	<b>(15)</b>	<b>(16)</b>	<b>(17)</b>	
<b>Stop No.</b>	<b>Stop Description</b>	<b>Odometer Reading</b>	<b>Passengers Boarded</b>	<b>Passengers De-Boarded</b>	<b>Passengers On Board</b>	<b>Distance Between Stops</b>	<b>Passenger Miles (15) x (16)</b>	
17	Brawley--K St./S. Palm St.	77527.6	1	2	7	0.1	0.7	
18	Brawley--Palm St. / J St.	77527.7		1	6	0.3	1.8	
19	Brawley--S. Main St. / Palm	77528	3	2	7	0.2	1.4	
20	Brawley--Main St. / 10th St.	77528.2	1		8	0.8	6.4	
21	Brawley--Main/South Plaza				8		0	
22	Brawley--Main/3rd St.	77529	2	2	8	0.6	4.8	
23	Brawley--E St./Rio Vista	77529.6	2	4	6		0	
24	Westmorland--Center/Main				6		0	
25	Westmorland--Center/6th				6		0	
26	Calipatria--Main St. / Park				6		0	
27	Calipatria--111/Main				6		0	
28	Niland--111/Main			6	0		0	
1972.5	(26) Capacity Miles (7) x (22)	Totals	42	42	281	26.3	304.5	
			(20)		(21)	(22)	(23)	
1078.3	(27) Seat Miles (8) x (22)			Mean On Board	19.413793 1			



SURVEY TRIP SHEET						# of Pages 1 of 1	
(1) Trip Serial No. <u>21ivc-pm01</u>		(2) Date <u>1-30-14</u>		(3) Day of Week <u>Thurs</u>		(4) Time Period <u>Mid</u>	
(5) Route No. <u>21-IVC Express-PM Calexico</u>		(6) Vehicle Inventory Number <u>1202</u>		(7) Total Capacity <u>75</u>		(8) Seated Capacity <u>41</u>	
(9)	(10)	(12)	(13)	(14)	(15)	(16)	(17)
Stop No.	Stop Description	Odometer Reading	Passengers Boarded	Passengers De-Boarded	Passengers On Board	Distance Between Stops	Passenger Miles (15) x (16)
1	Imperial Valley College	77956.3	77		77	9.7	746.9
2	Hacienda/Scaroni	77966		3	74	1.4	103.6
3	Hacienda/Ollie St.				74		0
4	Ollie/Birch St. - Post Office	77967.4		1	73	0.7	51.1
5	Kloke St/Birch St	77968.1		2	71	0.7	49.7
6	Kloke St./Grant St.	77968.8		2	69	0.3	20.7
7	Grant St./Eady	77969.1		3	66	0.4	26.4
8	Grant St./Cesar Chavez St.	77969.5		1	65	1.4	91
9	Emerson/6th				65		0
10	Third St./Paulin	77970.9		44	21	0.7	14.7
11	Mary/4th St.	77971.6		3	18	0.7	12.6
12	Encinas/7th St.(Library)	77972.3		5	13	0.7	9.1
13	Blair/Preston (Hospital/Clinic)	77973		7	6	0.7	4.2
14	Rockwood/Vega	77973.7		2	4	0.7	2.8
15	Rockwood/Robert Kennedy	77974.4		4	0	1.4	0
16	Cole Rd./Rockwood				0		0
17	Cole/111	77975.8			0		0
1462.5	(26) Capacity Miles (7) x (22)	Totals	77	77	696	19.5	1132.8
			(20)		(21)	(22)	(23)
799.5	(27) Seat Miles (8) x (22)			Mean On Board	43.5		

## EXHIBIT D EXCEL COMPUTERIZED TRIP-BY-TRIP DATA ENTRY (EXAMPLE: WEEK 52 INPUT)

Date	Day of Week	Week #	Route	Time Period	Boarded-UPT	Sum of Boardings	On-Board	Sum of On-Board	Bus Trip Distance	Sum of Distance	Passenger Miles=PMT	Sum of PMT	Capacity Miles	Sum of Capacity Miles	Seat Miles	Sum of Seat Miles	Avg. Route Length	PP MT	AP TL	PM T/P
6/2/13																		31	10.	
6/3/13			21-IVC								145	533.						31	37	0.04
6/4/13	Mon	52	-am	1	28	14027	22	13544	16.7	4.5	362.8	7	.5	743637	.7	7.1	77876	49.	52	479
6/6/13																		7	5	328
6/2/13																		31	10.	
6/3/13											145	574.						33	37	0.04
6/4/13	Mon	52	Green	2	8	14035	74	13551	14.3	8.8	40.7	4	9	743965.	.9	6	77876	28.	22	479
6/6/13																		3	4	328
6/2/13																		31	10.	
6/3/13											145	619.						35	36	0.04
6/4/13	Mon	52	Blue	2	8	14043	61	13557	14.7	3.5	44.8	2	1	744304	.1	4.1	77876	06.	95	479
6/6/13																		9	2	328
6/2/13																		31	10.	
6/3/13											146	007.						49	34	0.04
6/4/13	Mon	52	1n	2	66	14109	62	13620	19.8	3.3	387.9	1	1485	745789	.8	5.9	77876	80.	85	479
6/6/13																		3	1	328
6/2/13																		31	10.	
6/3/13											146	202.						52	35	0.04
6/4/13	Mon	52	21-IVC	3	14	14123	12	13633	16.8	0.1	195.3	4	1260	747049	.8	4.7	77876	92.	20	479
6/6/13																		9	8	328



FTA Form 406A was used to compile the Daily Trip-by-Trip Excel file totals for the year and to display the final results for the yearlong study.<sup>1</sup> Form 406A shows that a total of 14,369 unlinked boardings (Line 1) were counted for the year on the 565 sampled bus trips (Line 70, averaging 25.43 boardings per bus trip). In 2008-2009 there were 32.28 boardings per sampled trip. It is noted here and below that a substantial service increase occurred in October, 2013 along with other, smaller ones during the 2013-2014 and still others after the 2010-2011 study. Such an increase will dilute the passenger load per bus, which was, in many cases, the objective of the service increase.

- 21.69 passengers on 108 sampled weekday a.m. peak hour bus trips (prior to 9:00 a.m.)—2010-2011 = 27.89 boardings per sampled trip. This decrease per trip is consistent with the increase in number of trips from service increases.
- 30.68 boardings on 180 sampled midday weekday trips (9:00 a.m.—3:00 p.m.)—2010-2011 = 38.54 boardings per sampled trip, again consistent with the increased number of scheduled trips.
- 22.31 boardings on 137 weekday p.m. peak bus trips (3:00 p.m. –7:00 p.m.)—2010-2011 = 26.16 boardings per sampled trip.
- 11.20 boardings on 10 nighttime trips (after 7:00 p.m.)—2010-2011 = 19.89 boardings per sampled trip. This is a real decrease in that the number of nighttime trips did not increase; however, the sample is so small that this difference is not statistically significant.
- Saturdays averaged 26.57 boardings per sampled trip (85 sampled trips)—2010-2011 = 37.32 boardings per sampled trip—again with more Saturday trips in this sample period (54 versus 31 in 2010-2011).
- New Sunday service averaged 23.98 boardings per sampled trip for its six months of operation.

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<sup>1</sup> The original Form 406A was modified from its published version to accommodate the requisite weighting and to correct some errors in the form. The original Form 406A follows on the next page, with errors noted by yellow highlight. These errors were as follows:

- 1) Lines 11-12 on the original were repeats of lines 9-10 rather than the data shown on the modified Form 406A on lines 12-13, which was the clear intent, and
- 2) Line 10 on the original is shown as being calculated by dividing line 1 by line 7; whereas, the correct determination is line 4 divided by line 7

**Form 406A (Modified)**  
**ANNUAL DATA TO FTA: IMPERIAL**  
**VALLEY TRANSIT**  
**July 1, 2013-June 30, 2014**

Line No.	ITEM	WEEKDAYS				SATURDAY	SAMPLE		WEIGHTED
		AM PEAK	MIDDAY	PM PEAK	NIGHT		SUNDAY	TOTAL	SAMPLE **
	Accumulations from Trip by Trip Record								
1	(20) Passengers Boarded	2342	5522	3056	112	2258	1079	14369	14142.857
2	(21) Passengers on Board	21577	54721	28065	1208	21526	11889	138986	135253.718
3	(22) Bus Trip Distance	2418.6	3782.7	2842.8	169.2	2579	821.2	12613.5	12369.690
4	(23) Passenger Miles	28001.4	53777.5	30917.2	1157.6	24816.1	9710.3	148380.2	147574.917
5	(26) Capacity Miles	135485.6	218467.7	158143	4403.6	181298.8	61805	759603.7	711871.830
6	(27) Seat Miles	81811.7	130742.6	95098	3723.6	101014.4	33792.1	446182.4	424945.766
7	(28) Trips in Sample	108	180	137	10	85	45	565	
8	(29) Total Number of Bus Trips	9110	11837	9982	1015	2713	468	35125	
9	WEIGHTS**	1.358729	1.059272	1.173641	1.63495	0.514126	.167522		
	Sample Averages								
10	Unlinked Passengers (Boardings) per Trip (1/7)	21.6853	30.678	22.307	11.200	26.565	23.978	25.432	25.032
11	Passenger Miles per Trip (4/7)	259.272	298.764	225.673	115.760	291.954	215.784	262.620	261.195
12	Capacity Miles per Trip (5/7)	1254.496	1213.709	1154.328	440.360	2132.927	1373.444	1344.431	1259.950
13	Seat Miles per Trip (6/7)	757.516	726.348	694.146	372.306	1188.405	750.936	789.703	752.116
14	% Passenger Miles to Seat Miles per Trip (11/13)	34.227%	41.132%	32.511%	31.088%	24.567%	28.735%	33.255%	34.728%
15	% Passenger Miles to Capacity Miles per Trip (11/12)	20.667%	24.616%	19.550%	26.288%	13.688%	15.711%	19.534%	20.731%
	Annual Totals (weighted by number of trips)								
16	Annual Weighted Unlinked Passenger Trips (10*8*9)	197553	363135	222668	11368	72071	11222		878017
17	Annual Weighted Total Passenger Miles (11*8*9)	2361967.9	3536469.5	2252667.9	117496.4	792071.2	100986.9		9161659.8

Inasmuch as Saturdays and Sundays were oversampled relative to weekday trips, with 85 out of 565 sampled trips (15.0 percent of all sampled trips) on Saturday and 45 (8.0 percent) on Sunday in contrast to the actual bus trips of 7.7 percent and 1.3 percent respectively, the overall 25.43 sample boarding average requires weighting. When weights are applied<sup>2</sup>, the mean number of boardings per trip for the system-wide sample is reduced slightly to 25.03 (2010-2011 = 31.20 boardings per trip).

Applying these mean numbers of unlinked boardings and correspondingly determined passenger miles (based on number of passengers on-board and distance between stops) reveals the final estimates required for the federal database. **Form 406A shows that the annual estimated unlinked passenger boardings and mileage is determined (with a margin of error of +/- 10 percent at 95 percent confidence) to be 878,017 riders who traveled 9,161,660 passenger miles during the year (Lines 16 and 17).** In 2010-2011, the corresponding estimates were 918,578 passengers and 9,871,209 passenger miles, indicating statistical consistency between the two periods, with 2013-2014 showing a decrease of 4.4 percent in unlinked passenger trips and 7.2 percent passenger miles, both of which are well within the +/- 10 percent margin of error, indicating that no statistical difference between the study periods has been found.

Form 406A also breaks down the weighted total ridership and mileage by time of day (Lines 16 and 17). Weekday ridership appeared to decline from 2010-2011, but still within the margin of error—and weekend ridership increased in excess of the margin of error.

- There were 197,553 unlinked boardings annually during weekday a.m. peak periods, traveling 2,361,968 miles. Corresponding totals from 2010-2011 were 209,054 unlinked boardings and 2,576,057 passenger miles.
- Peak riders during the weekday p.m. periods total 222,668 and 2,252,668 miles (2010-2011 = 237,567 boardings and 2,570,906 miles)
- Weekday midday boardings totaled 363,135 for the year and 3,536,470 miles. In 2010-2011, there were 390,010 unlinked boardings and 3,793,996 miles.

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<sup>2</sup> Inasmuch as the sample distribution does not precisely mirror the actual distribution of trips weighting was appropriate for the upper portion of Form 406A. Weights are equal to the total trips in the sample (Line 7—Sample Total column) divided by total number of bus trips sampled (Line 8—Sample Total column). Then, for each time period, that result is divided by the total number of trips in the sample by time period (7) divided by the total number of bus trips sampled by time period (8). These weights are then multiplied by sample totals to obtain sample data that is weighted to reflect the actual distribution of bus trips in Lines 16-17 and the right-hand column.

- Weekday night ridership seemed to fall substantially (again, however, the small sample size renders this difference as not statistically interpretable). Boardings included 11,368 riders traveling 117,496 miles, which equaled fewer riders and miles than in 2010-2011 (22,978 boardings and 162,119 passenger miles).
- Weekend travel increased. Saturdays had 72,071 boardings and 792,071 miles, an increase from 2010-2011 (58,999 boardings and 768,180 miles). Sunday service, with only 18 scheduled trips per Sunday, added 11,222 boardings and 100,987 passenger miles during its six months of operation.

Imperial Valley Transit vehicles experience their highest percentage occupancy (Line 14) during midday on weekdays, with 41.13 percent of seat miles occupied (2010-2011 = 51.7%--again reflecting the increased service), followed by the weekday morning peak period (34.23 percent—2010-2011 = 41.2). Sundays, not unexpectedly, display the lightest occupancy (24.57 percent of seat miles). Overall, for all buses, 34.73 percent of seats miles were occupied with 20.73 percent of the combined seated and standing capacity occupied. In 2010-2011, the corresponding occupancies were 43.6 percent of seat miles of seats and 31.6 percent of seated and standing capacity, again reflecting the increased service levels in 2013-2014.

ANNUAL DATA TO FTA

Transit ID \_\_\_\_\_

Level \_\_\_\_\_

Fiscal Year End \_\_\_\_\_

Type of Service \_\_\_\_\_

Mode \_\_\_\_\_

Line No.	ITEM	WEEKDAYS				SATURDAY	TOTAL
		AM PEAK	MIDDAY	PM PEAK	OTHER		
	Accumulations from Daily Record Sheet						
1	(20) Passengers Boarded						
2	(21) Passengers on Board						
3	(22) Bus Trip Distance						
4	(23) Passenger Miles						
5	(26) Capacity Miles						
6	(27) Seat Miles						
7	(28) Trips in Sample						
8	(29) Total Number of Bus Trips						
9	Unlinked Passengers per Trip (1/7)						
10	Passenger Miles per Trip (1/7)						
11	Unlinked Passengers per Trip (1/7)						
12	Passenger Miles per Trip (4/7)						

\*DO = Directly Operated PT = Purchased Transportation

Sample Plan Used \_\_\_\_\_

Date Prepared \_\_\_\_\_

Date Updated \_\_\_\_\_

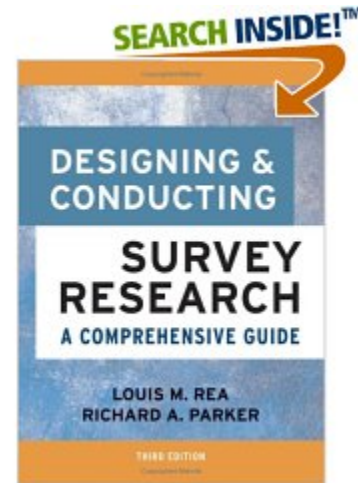


**APPENDIX: Qualifications of Rea & Parker Research**

**Richard A. Parker, Ph.D.**

**Louis M. Rea, Ph.D.**

Rea & Parker Research is a statistical sample survey and market research and economic consulting firm based in San Diego, California, with facilities in Los Angeles and Orange County. It was founded by Louis M. Rea, Ph.D. and Richard A. Parker, Ph.D. in 1984 and has grown into a well-respected, financially stable, and substantial research organization with clients throughout the State of California and the Southwest who will attest to the firm's ability to deliver a quality product within the originally designated budget and in accordance with the contracted time schedule. Rea & Parker Research is a certified Small Business Enterprise by the State of California.



With particular reference to the current project, the references below will indicate a wealth of experience in on-board bus and rail projects for several entities in Southern California, transportation research including intercept surveys, focus group analysis, and telephone surveys. Rea & Parker Research has extensive experience working with major public agencies in Southern California and the State of California, including the Orange County Transportation Authority. Rea & Parker Research has 30 years of experience in transportation related surveys for both the public and private sectors.

*Richard A. Parker* is the president of Rea & Parker Research and a professor emeritus in the School of Public Affairs at San Diego State University. Dr. Parker is a co-author (with Louis M. Rea) of a highly successful book, *Designing and Conducting Survey Research: A Comprehensive Guide*, published by Jossey-Bass/Wiley Publishers (division of Simon & Schuster) in 1992, with a second edition published in 1997 and a third edition published in 2005. The fourth edition of the book is in process and publication is scheduled for Fall of 2014.

*Louis M. Rea* is an emeritus professor of city planning in the School of Public Affairs at San Diego State University where he served as school director for nearly twenty-five years. He teaches graduate courses in statistical analysis, transportation planning, survey research, program design and evaluation, and urban/fiscal problems, as well as undergraduate courses in introductory public administration and policy and evaluation in Criminal Justice.

Rea & Parker Research utilizes the university offices and state-of-the-art computer facilities, along with access to renowned scholars and reference material when necessary.

Rea & Parker Research is a division of Rea & Parker, Incorporated, a California corporation—incorporated in 1985 (Fed ID: 33-0156230). Its home office in San Diego is located at 4875 Casals Place, San Diego, CA 92124 (mailing address: P.O. Box 421079, San Diego, CA 92142-1079). Telephone numbers for Rea & Parker Research are 858-279-5070 and 858-279-1170 (fax). The website is [www.rea-parker.com](http://www.rea-parker.com).

Rea & Parker Research has conducted transportation related research as well as research associated with water issues, immigration, and energy for over 30 years.

Survey Research Clients:

- State of California--Senate Rules Committee
- State of California--Senate Special Committee on Border Issues
- State of California--Office of the Auditor General
- State of California--Office of the Attorney General
- Los Angeles County Metropolitan Transportation Authority
- Southern California Regional Rail Authority (Metrolink)
- Orange County Transportation Authority
- California Department of Transportation (CALTRANS)
- Bay Area Rapid Transit
- Metropolitan Transit System (San Diego Transit)
- North County Transit District
- Fresno Area Express
- Gold Line Authority (Los Angeles MTA)
- Southern California Association of Governments (SCAG)
- San Diego Association of Governments (SANDAG)
- San Diego Gas & Electric
- San Diego County Sheriff's Department
- San Diego County Water Authority
- San Diego Unified School District
- Imperial Irrigation District
- Otay Water District
- University of California-Berkeley
- University of California-Los Angeles
- University of California-Davis
- County of Orange
- County of San Diego
- City of San Diego
- City of San Diego Housing Commission

- City of Escondido
- City of Carlsbad
- City of Poway
- City of Davis
- City of St. Helena
- City of Dana Point
- City of Oceanside
- Imperial Valley Association of Governments
- Imperial County Transportation Commission
- Imperial Valley Transit
- Santa Clarita Transit
- Santa Monica Municipal Bus Lines
- Culver CityBus
- Foothill Transit
- El Monte Transit
- Torrance Transit
- Cerritos on Wheels
- Commerce Transit
- Los Angeles Commuter Express
- Pasadena ARTS
- Carson Circuit
- Alhambra Transit
- Clovis Stageline
- Riverside Transit Agency
- San Diego County Law Library
- City Heights Community Development Corporation (City of San Diego)
- Centre City Development Corporation (City of San Diego)
- North Park Main Street Association (San Diego)
- San Luis Rey Indian Water Authority
- California Center for Sustainable Energy

Economic Research Clients:

- State of California--Senate Rules Committee
- State of California--Senate Special Committee on Border Issues
- State of California--Office of the Auditor General
- State of California--Office of the Attorney General
- California Department of Transportation (CALTRANS)
- Southern California Gas Company
- San Diego County Sheriff's Department
- San Diego Unified School District
- San Diego Gas & Electric
- Southern California Gas Company
- Pardee Construction Company
- San Diego Aircraft Carrier Museum Foundation
- Westbrook Development
- Genstar Development
- Laing Urban
- Pacific Century Development
- Subway, Inc.

- Westfield Shopping Centers
- Shea Properties
- City of San Diego
- City of San Diego Housing Commission
- City of Carlsbad
- City of Poway
- City of Holtville
- Southern California Association of Governments
- Imperial Valley Association of Governments
- San Diego County Taxpayers Association
- California Center for Sustainable Energy
- City Heights Community Development Corporation (City of San Diego)
- Centre City Development Corporation (City of San Diego)
- La Jolla Band of Mission Indians
- Viejas Enterprises
- Foxwoods Development
- Big Pine Paiute Economic Development Corporation
- Joint Labor/Management Committee-Retail Food Industry
- San Diego/Imperial Counties Labor Council AFL-CIO
- Southwest Strategies, LLC
- Stirling Enterprises
- Ivey Ranch Development Company
- Pacifica Companies
- Pacific Beachfront Resort
- Housing Solutions Alliance
- Smart Growth Coalition—National City
- Rancho Guejito/Rodney Company
- Seacoast Inn
- Shopoff Group
- Mercado Barrio Logan
- DTOM Sports Apparel
- Mortgage Electronic Registration System, Inc. (MERS)
- Chelsea Investment Corp.
- Border Communities Capital Corp.

**Richard A. Parker, Ph.D. is Professor Emeritus in the School of Public Affairs at San Diego State University where he teaches graduate and undergraduate courses in statistics, survey research, urban economic development, finance, and real estate.** Dr. Parker possesses extensive analytical experience in statistical survey research, market analysis, land use, real estate development and valuation, and transportation issues. He will serve as the co-Project Director.

Dr. Parker has been a consultant to both the public and private sectors for almost 30 years. He has specialized in sample survey research for various governmental agencies and market research for retail, commercial, residential, and recreational development. Particular emphasis has been placed upon market research conducted in the field of transportation, with a myriad of rider/on-board surveys, intercept surveys, telephone surveys, and focus group projects having been performed for several transportation agencies. Dr. Parker has further established his reputation with regard to fiscal impact studies, urban redevelopment, and environmental impact/socioeconomic and demographic analyses. Dr. Parker has also been involved on a consultative basis with a number of issues concerning economic and population growth impacts in Southern California and has published a variety of articles, monographs, and books on these

subjects. He has further participated in various panel discussions, delivered expert testimony to legislatures and courts, and appeared on several radio and television programs on behalf of his clients.

Dr. Parker is a graduate of Brown University, the University of California at Berkeley, and UCLA. He possesses degrees in Business Administration from those institutions (B.S., MBA, and Ph.D.) plus a further graduate degree in City Planning (MCP) from San Diego State University.

**Louis M. Rea, Ph.D. is Professor Emeritus of City Planning in the School of Public Affairs at San Diego State University. Dr. Rea teaches graduate courses in statistical analysis, transportation planning, survey research, and urban/fiscal problems.** He has published a variety of articles, participated in panel discussions, and delivered numerous papers at professional conferences throughout the United States. He has extensive experience as a researcher and consultant in California and particularly in San Diego and the Los Angeles area for the past 30 years. Dr. Rea will be Co-Project Director for this study.

Dr. Rea has conducted and supervised numerous projects in the areas of transportation research and transit planning, including on-board bus/train surveys, ride checks, intercept surveys, and focus groups. He has also conducted Internet and telephone surveys in numerous consulting and research assignments for municipal jurisdictions and private businesses throughout Southern California. Dr. Rea has prepared environmental impact reports and market analyses for various commercial/recreational developments and has analyzed the feasibility of assessment districts and direct benefit financing. Dr. Rea has also prepared demographic and economic profiles and projections for various projects.

Dr. Rea is a graduate of Colgate University in New York, where he earned a BA. He received a Master of Regional Planning (MRP) and Ph.D. in Social Science. from Syracuse University in Regional Planning.

Complete resumes are attached.

### **Survey Research Consultative Projects**

#### **Los Angeles County Metropolitan Transportation Authority:**

##### **On-Board and Telephone Bus Surveys**

- On-Board bus survey for MTA, Foothill Transit, and Duarte Transit concerning expansion of Gold Line—800 respondents
- Conducted the On-Board Bus Survey for **Los Angeles County Metropolitan Transportation Authority**, including 40,000 rider/on-board surveys, 2,500 follow-up telephone interviews, and 10 focus groups.
  - Final deliverables include/included 4 reports:

- Satisfaction, travel patterns, fare media, and demographics of 31,000 weekday bus riders on LACMTA buses and those of 12 municipal transit operators within Los Angeles County (**Alhambra Community Transit, Culver City Bus Lines, Commerce Transit, Pasadena ARTS, Cerritos-On-Wheels (COW), Santa Monica Big Blue Bus, Los Angeles Commuter Express, Santa Clarita Transit, Torrance Transit, Carson Circuit, El Monte Trolley, and Foothill Transit**).
- Satisfaction, travel patterns, fare media, and demographics of 3,500 weekend bus riders on LACMTA buses.
- Detailed follow-up telephone survey of 2,500 weekday riders of MTA and 12 municipal operators expanding upon demographics, satisfaction, problem occurrence, importance/concern, travel behavior, use of MTA website, customer service, and marketing media and messages.
- Geocoded home, origin (production), boarding, alighting, and destination (attraction) data is presented in color graphics by line, service sector, and planning area.
- Prepared the on-board survey instrument for LACMTA and each of the 12 municipal operators and had its surveyors ride the buses of randomly selected bus runs from June, 2001 to December, 2001, with follow-up surveys also conducted on-board during March, 2002.
- Prepared and tested the survey instrument in 10 focus group sessions conducted in Los Angeles County and in two extensive on-board pretests involving almost 1,000 respondents. Focus groups were conducted in different geographical areas of the County, among different age and ethnic groups, and in both Spanish and English.
- The telephone survey consisted of 39 questions, including 110 individual variables. The mean survey time was 13.09 minutes, administered in both English and Spanish. Media information concerning messages communicated on television was added to more typical transportation-based questions. It was conducted from late January to early March, 2002. The analysis consisted of detailed crosstabulations, correlations, and analyses of variance in order to assess market segmentation strategies.

### **On-Board and Telephone Rail Surveys**

- On-Board survey of Gold Line riders concerning expansion plans—800 respondents

- Conducted the On-Board Rail Survey for **Los Angeles County Metropolitan Transportation Authority**, including 15,000 rider/on-board surveys, 1,000 follow-up telephone interviews, and 3 focus groups.
  - Final deliverables include/included 4 reports:
  - Satisfaction, travel patterns, fare media, and demographics of 12,000 weekday riders on LACMTA Metro Rail—Blue, Green, and Red Lines.
  - Satisfaction, travel patterns, fare media, and demographics of 3,000 weekend bus riders on LACMTA Metro Rail—Blue, Green, and Red Lines.
  - Detailed follow-up telephone survey of 1,000 weekday and weekend riders of Metro Rail expanding upon demographics, satisfaction, problem occurrence, importance/concern, travel behavior, use of MTA website, customer service, and marketing media and messages.
  - Geocoded home, origin (production), and destination (attraction) data is presented in color graphics by line.
  - Prepared the on-board survey instrument for LACMTA and had its surveyors ride the trains on randomly selected runs from August, 2001 to October, 2001, with follow-up surveys also conducted on-board during February, 2002.
  - Prepared and tested the survey instrument in 3 focus group sessions conducted in Los Angeles County and in two extensive on-board pretests involving almost 500 respondents. Focus groups were conducted in different geographical areas of the County, among different age and ethnic groups, and in both Spanish and English.
  - The telephone survey consisted of 42 questions, including 103 individual variables. The mean survey time was 12.29 minutes, administered in both English and Spanish. It was conducted from late January to early March, 2002. Media information concerning messages communicated on television was added to more typical transportation-based questions. The analysis consisted of detailed crosstabulations, correlations, and analyses of variance in order to assess market segmentation strategies.

### **Telephone Survey**

- 600-person telephone survey in San Gabriel Valley concerning expansion of Gold Line and Measure R



## **Orange County Transportation Authority (OCTA):**

### **Market Program Consultant—Seniors, Pre-Seniors, and Hispanics**

Marketing program consultant in OCTA's effort to attract and retain more riders, particularly from Hispanic and senior citizen groups. Sixteen focus groups were scheduled and twelve conducted (four having been deferred at OCTA's request to July, 2002).

Focus groups were held among riders and non-riders in Hispanic and senior citizen population enclaves. Further focus groups were held among pre-seniors (age 55-64) in order to ascertain information about their willingness to ride the buses as they grow older and what they would require in order to do so with much satisfaction.

Marketing messages were tested, including a new logo, new bus schedules, and OCTA publications. Intensive examination of media usage, including radio stations preferred, television channels watched, and newspapers read, was undertaken. Advertisements that are successful among these groups were explored.

Also conducted were two 600-person telephone surveys among Latino and senior residents of Orange County. These surveys pursued much the same information as the focus groups, including media usage, television programs watched, community cable programming information, and so forth in a quantitative mode that permits tracking and trend analysis over time. Detailed analysis using crosstabulations, analyses of variance, correlations, and regression, and factor analysis were undertaken as a part of the segmentation effort.

### **CenterLine Customer Profile**

Conducted the CenterLine Customer Profile for the **Orange County Transportation Authority** involving intercept surveys of 8,800 potential urban light rail users, 1,500 telephone survey interviews, and 12 focus group/roundtables. Final analysis assessed likely ridership, preferred destinations, trip purposes, public support, demographic and psychographic profiles of potential light rail ridership

Twenty-one sites were selected in Orange County that were to be likely destinations for a proposed light rail system. Randomly selected individuals at sites including Disneyland, John Wayne Airport, University of California-Irvine, California State University-Fullerton, Main Street Santa Ana, Civic Center, UCI Medical Center, South Coast Plaza, and others were surveyed in person to determine their interest in using the proposed light rail system, their current transportation behavior, and design/marketing themes. This intercept survey was a short 4-minute interview to determine how far people would walk, how often they would ride, for what purpose (employment/recreation), among others.

These intercept interviews were followed-up by detailed 18-minute telephone interviews of randomly selected residents of central Orange County and western Riverside and San Bernardino Counties. These surveys were to establish greater depth of understanding of the potential market, including demographics and transportation needs/desires. Detailed analysis using crosstabulations, analyses of variance, correlations, and regression, and factor analysis were undertaken as a part of the segmentation effort.

At the same time as the surveys were being conducted, 12 focus groups throughout the County (Fullerton, Santa Ana, Costa Mesa, Irvine, Orange, and Anaheim) involving mayors, city council persons, business leaders, local merchants, tourism officials, and the general public were being held to uncover the qualitative richness behind the quantitative intercept and telephone survey data pertaining to public perceptions of the system, public fears of disruption, desired routes, and local needs.

### **Additional research projects for the Orange County Transportation Authority**

- Prepared, conducted and analyzed 2,000 person rider/on-board bus survey for the **Orange County Transportation Authority** regarding monthly, weekly, and daily bus pass sales. Prepared questionnaire, administered survey, analyzed data in order to assess potential for expanding bus pass sales.
- Prepared Multi-Cultural Market Assessment Study for transportation services in Orange County. Formulated baseline data and marketing strategies for long- and short-term transportation related issues facing Orange County's diverse multi-cultural communities, with particular emphasis upon Hispanic and Vietnamese communities. Administered three different statistical surveys including intercept and rider/on-board formats, each in English, Spanish, and Vietnamese.
- Prepared, conducted and analyzed Vietnamese ridership study, including in-person intercept survey, telephone sample survey, and focus group among Vietnamese community leaders regarding current bus service and future transit needs in the Vietnamese areas of Orange County.
- 2007--Analyzed 2,000 person ACCESS (disabled paratransit) customer service satisfaction survey.
- 2007—conducted and analyzed counts of passengers on Amtrak and Metrolink trains at every Orange County station plus Oceanside, Norwalk, and Commerce.
- 2008—Focus groups (4) concerning integration and improvements to service (Metrolink, Amtrak, Coaster) along Los Angeles-San Diego (LOSSAN South ) corridor
- 2008/2009—Rail safety study including observations at each of 54 at-grade rail crossings in Orange County, interviews with 60 local decision makers and other community leaders, and 600 person residential telephonic survey.
- Conducted focus groups among senior/disabled bus riders and full fare bus riders concerning proposed restructuring of bus fares. Also conducted roundtable meetings with coach operators and social service agency representatives.
- Conducted public participation portion of Orange County Bus Improvement Project (BUSLINK). Prepared report based upon focus group discussions with bus users and non-users, employee transportation coordinators, real estate developers, senior citizens, students, transportation advocates, Orange County employers, and members of ethnic minority communities throughout the County. Final report summarized the perceptions of focus group participants concerning potential improvements to the bus system.

- Conducted focus group discussions with Metrolink commuter rail users and non-users within Orange County for purposes of identifying service and marketing issues and opportunities. Prepared final report summarizing findings from these focus group discussions.
- Conducted focus group discussions with clients of ACCESS paratransit service for purposes of identifying the viability of alternative transportation options.
- Conducted focus groups among users of ACCESS for purposes of refining six strategies for providing a financially viable service to ACCESS customers and prepared formal final report.
- Conducted a series of roundtable discussions concerning the implementation of changes in the ACCESS system pertaining to reservations, eligibility, schedule, rates, pick-up and delivery policy, etc., and prepared formal final report.
- Conducted focus group discussions concerning Master Plan of Countywide Commuter Bikeways and prepared final report.
- Prepared Multi-Cultural Market Assessment update, including focus groups within the Hispanic community concerning the marketing of transportation services. Evaluated the success of programs commenced following the initial Multi-Cultural Market Assessment.
- Conducted focus group and roundtable discussions with community leaders, general public, and representatives of goods movement/freight industry regarding long-range transportation planning in Orange County.
- Conducted focus groups among businesses and residents of Orange County concerning recommended Corridor (Fullerton-Irvine) Transportation Strategy.
- Conducted focus groups among residents of northern, central, and southern Orange County regarding the FastForward long-range transportation.
- Conducted roundtables and focus groups concerning routing issues and public support for the CenterLine urban light rail system proposed for Orange County.

### **Santa Clarita Transit**

- Three focus groups among Latinos, commuters, and local bus riders to identify service and marketing-related issues and policies for rider attraction and retention.

### **Southern California Regional Rail Authority (Metrolink)**

- Determined the requisite two-stage sample for Federal Transportation Agency requirements for annual passenger and mileage calculations.
- Conducted a 3,500 person rider/on-board sample survey on 7 Metrolink lines regarding customer satisfaction, importance, problem occurrences, travel behavior,

marketing strategies, and demographics. Also undertaken were precise counts of passenger boardings and alightings at each station for each train in the Metrolink train system.

- Conducted a 6,000 person rider/on-board sample survey on 6 Metrolink lines regarding customer satisfaction, importance, problem occurrences, travel behavior, marketing strategies, and demographics.
- Conducted focus groups with student riders and potential riders of Metrolink.
- Conducted Riverside County rider focus groups for Metrolink regarding use of new stop and need for reverse commute trains.

### **Metro Gold Line Foothill Extension Construction Authority (2010 - 2011)**

- Conducted an on-board bus satisfaction survey and an on-board rail satisfaction (Gold Line) survey to determine the potential interest of rail and bus riders in making use of the proposed Gold Line Extension from Pasadena to Azusa and later to the Ontario Airport.
- Conducted a sample telephone survey of residents who live in relatively close proximity to the Gold Line Extension. This survey determined the extent to which existing Gold Line customers and potential customers may use the Gold Line Extension.
- Conducted an intercept bicycle survey to determine the extent to which bicycle riders may potentially use the Gold Line in conjunction with bicycle travel.

### **Fresno Area Express**

- Origin-Destination on-board survey –3500 respondents
- Bus satisfaction intercept and on-board—1500 respondents
- Telephone satisfaction survey of Handy Ride para transit customers regarding

### **California Department of Transportation**

- Prepared growth inducement study for State Route 56 through the northern portion of the City of San Diego. Study included fiscal impacts as well as housing, employment, and income forecasts; also included were planning implications of possible growth inducing factors associated with the construction of the highway.
- Conducted focus groups and web-based survey of CALTRANS engineers regarding job satisfaction and staff morale.
- Eight surveys among pilot study riders of combined commuter train/rental car system of commuting.

### **Bay Area Rapid Transit**

- Market analysis and ridership projection for two stations located on East Bay line of BART.

### **Southern California Association of Governments**

- 800 person survey and 6 focus groups to determine desired route for high-speed rail from Northern California between Los Angeles and San Diego.
- 5200 person survey of pedestrian, passenger vehicle, and commercial truck border crossers at Calexico and Algodones/Yuma pertaining to trip purpose, frequency, origin/destination, and other factors.

### **Riverside Transit Agency**

- On-board survey of 8000 riders of Riverside bus system regarding satisfaction, frequency, demographics
- On-board survey and count of RTA bus lines that intersect with Downtown Riverside Transit Terminal in order to identify magnitude and nature of travel disruptions that will occur when terminal is relocated
- On-Board survey of commuter bus lines
- Intercept of 1000 passengers transferring and/or ending trip at Downtown Terminal

### **San Diego Metropolitan Transit System**

- On-board counts of weekend contract service
- Conducted focus groups concerning routing/scheduling and planning/marketing issues for the expansion of the San Diego Trolley.

### **San Diego Association of Governments**

- Focus groups concerning carpool, vanpool, transit alternative commute options.

### **Imperial Valley Transit**

- Year long sample survey (2013-2014) and count of passengers on-board buses in order to meet Federal Transportation Agency requirements for statistically reliable estimate of annual passenger miles traveled.
- Year long sample survey (2010-2011) and count of passengers on-board buses in order to meet Federal Transportation Agency requirements for statistically reliable estimate of annual passenger miles traveled.

- Year long sample survey (2008-2009) and count of passengers on-board buses in order to meet Federal Transportation Agency requirements for statistically reliable estimate of annual passenger miles traveled

#### **University of California PATH/SANDAG**

- Six Month panel for focus groups and surveys at start and end concerning new transit plan that utilizes rental cars at either end of transit trip.

#### **State of California (Senate Rules Committee, Senate Select Committee on Border Issues, and Office of the Auditor General)**

- Analysis of fiscal impact of undocumented immigrants on public services in San Diego County and California, including criminal justice system, education, and public health. Further identified estimated number of undocumented residents and their contributions to State and local tax revenues. Also included in the analysis were federal revenues, false documentation issues, and macro-economic impacts. Study included substantial primary data gathering techniques, including direct interviews with undocumented immigrant workers and INS returnees. Prepared, administered, and analyzed sample surveys of undocumented immigrants in San Diego County for purposes of determining employment characteristics, revenue generation, demographics, and migration patterns. Research included extensive face-to-face interviews and structured roundtable discussions.

#### **City of Oceanside**

- Prepared, implemented, and analyzed telephonic survey of 803 residents of Northern San Diego County concerning awareness, behavior, and opinions about water runoff pollution.

#### **San Diego County**

- Prepared, implemented, and analyzed 1,305 person telephonic survey of unincorporated area residents concerning awareness, behavior, and opinions about water runoff pollution.
- Conducted, analyzed and reported upon two 600-person telephonic public opinion and awareness surveys before and after public awareness campaign to inform county residents about emergency preparedness.
- Prepared, implemented, and analyzed 8 intercept surveys of law library users concerning classes offered, benefits, opportunities for improvement.
- Evaluated the San Diego Community Planning Process as viewed by planning group participants and informed parties (developed questionnaire, analyzed data, and prepared a final report).

### **City of Coronado**

- Prepared, implemented, and analyzed 600 respondent in-person intercept survey of visitors to identify places of staying, recreational activities, modes of transportation.

### **City of Carlsbad**

- Prepared, implemented, and analyzed citywide sample telephone survey of 600 respondents concerning future urban commercial development in this fast growing Northern San Diego County city. Extensive analysis of underlying values through various development scenarios and conjoint analytical techniques was featured.

### **City of San Diego**

- Prepared, implemented, and analyzed 400 person telephone survey of residents of three low income San Diego communities concerning issues such as crime, economic development, city services, and the success of the City's "Weed and Seed Program."
- Prepared, administered, and analyzed sample survey of San Diego County residents for purposes of assessing utilization and demand factors for Mission Bay Park in San Diego. This survey of 850 persons served to inform the revision of the Park's Master Plan.
- Analysis of market for existing condominium developments in downtown San Diego. Detailed analysis included extensive survey and corresponding statistical and qualitative analysis including recommendations for future market composition.
- Consultant for the revitalization of an older commercial retail area in mid-city San Diego seeking to rejuvenate its retail base. Three surveys and a series of key participant discussions were performed in conjunction with this effort--existing retailers, potential retailers, and residents of the area--plus corresponding statistical and qualitative analysis. Final report included a recommended retail structure for the community that would be realistic, implementable, and sensitive to the diversity of ethnicity in this community.
- Prepared, conducted, and analyzed 600 person telephone survey in mid-city for purposes of establishing need for community court in the area populated by myriad low-income minority and immigrant groups. Also in-person interviews/surveys of 100 local business owners.
- Prepared, implemented and analyzed 400 person survey of City residents concerning water supply awareness, conservation attitudes and behaviors, and opinions about water recycling.

### **San Diego Unified School District**

- Survey of 400 San Diego County building contractors concerning advantages and disadvantages of performing construction tasks for the San Diego Unified School District.

### **County of Orange**

- Prepared, implemented, and analyzed 1,040 person telephone survey of unincorporated area (North Tustin) in order to assess level of service satisfaction issues and potential annexation/sphere of influence adjustments

### **County of San Diego**

- Prepared, implemented and analyzed two 600 person surveys of County residents concerning emergency preparedness before and after public information campaign

### **San Diego County Water Authority Public Opinion Surveys**

Prepared, implemented, and analyzed 2003, 2004, and 2005, 2006, 2008, 2009 and 2011 (in progress) Public Awareness Survey of telephone respondents (600 in 2003, 710 in 2004, 725 in 2005, and 700 in 2006, 2008 and 2009) concerning behavior, opinion, rate tolerance, future needs assessment issues, desalination, water reclamation, conservation practices.

Also for the **San Diego County Water Authority:**

- Prepared, implemented, and analyzed survey of General Managers and Department Heads of 23 member agencies about satisfaction, effectiveness, usefulness of services and programs provided by Water Authority in 2003 and 2005
- Prepared, implemented, and analyzed employee satisfaction survey of Engineering Department.
- Prepared, implemented, and analyzed 400 respondent survey among San Diego County contractors regarding project labor agreements and public works contracting.
- 2008—two 600 person telephone surveys tracking before and after impacts of public awareness campaign concerning water conservation.

### **Otay Water District**

- 2011 Customer Awareness and Satisfaction Survey (n = 300)
- 2010 Desalination Survey—400 respondents and 2 focus groups
- 2010 Employee Satisfaction online survey



- 2009 Customer Awareness and Satisfaction Survey of 300 customers of the District
- 2009 Large Users Drought Telephone Survey
- 2008 Customer Service telephone survey of 300 participants prepared, conducted, and analyzed.
- 2008 Customer Awareness and Satisfaction telephone survey of 300 participants prepared, conducted, and analyzed
- 2008 Employee Satisfaction survey prepared conducted and analyzed using web-based instrument.
- 2007 residential customer satisfaction/awareness (n=300) telephone survey prepared, implemented and analyzed. Emphasis upon customer satisfaction and conservation measures.
- 2007 Call Center customer service telephone survey (n = 200) focused upon satisfaction with customer service and communications.
- 2005 customer satisfaction survey of 350 residential customers concerning behavior, opinion, customer service, desalination, water reclamation, and conservation practices.

### **Imperial Irrigation District**

- Instruction to energy traders in use of mathematical and statistical tools to aid in their requisite analyses.
- Developed statistical models that predict energy consumption based upon various climactic conditions to within 1-3% of actual.

### **San Luis Rey Indian Water Authority**

- Prepared and supervised administration of detailed census and opinion survey of 2,500 members of five Indian tribes. Particular emphasis was given to issues of importance to the tribes' members such as job opportunities, education, cultural issues, economic development opportunities and transportation access issues. Focus group sessions with each tribe were utilized to complement the survey findings. Final report included both census data and fully tabulated and statistically analyzed summary of the opinions of reservation residents.

### **City of Poway, California**

- Prepared, administered, and statistically analyzed a mail survey of 800 Poway businesses regarding their needs and opinions concerning Poway's business

climate and future opportunities. Final report included detailed analysis and exposition, including recommendations where appropriate.

- Prepared, administered, and statistically analyzed a mail survey of 6,000 Poway households concerning their opinions regarding a variety of issues of importance to the City for future planning. Final report included fully tabulated results with accompanying statistical reports

#### **North Park Main Street Association**

- Conducted two intercept surveys--business owners and shoppers in San Diego Main Street National Historic Preservation Area in order to determine shopping needs and level of improvement or decline in area since the implementation of the Main Street program.

#### **City of Dana Point, California**

- Prepared recreation and parks needs assessment survey for administration to general public.

#### **City of Davis**

- Prepared, administered, and analyzed sample survey of 833 residents of Davis, California for purposes of assessing utilization, demand, and tax allocation factors for City of Davis Department of Parks and Recreation in concert with the preparation of the Master Plan.

#### **City of St. Helena**

- Prepared, administered, and analyzed 400 respondent sample survey of City of St. Helena, California residents for purposes of General Plan revisions.

#### **San Diego County Sheriff's Department**

- Established analysis by station (11) of workload and availability for calls for service among Sheriff's patrol deputies. Over 3,000 samples drawn and analyzed to establish manpower needs.
- Utilized scientific sample to analyzed time savings applicable to the conversion of arrest data to laptop computers from manual entry. Final report included specific determination of manpower hours saved and recommendations for software and operational policy changes in order to maximize technological advantages.
- Workload analysis based upon sample of time logs from Sheriffs Communication Center and Monte Carlo simulations in order to identify necessary staffing levels for 9-1-1, radio, and administrative communications throughout San Diego County

### **University of California, Davis**

- Web-based survey of all identifiable San Francisco Bay Area water management professionals concerning water conservation policies and practices, including follow-up telephone interviews.

### **City of Escondido**

- Prepared, administered, and statistically analyzed telephone survey of 425 residents concerning library facilities.

### **California Center for Sustainable Energy**

- Focus groups concerning the use of solar energy for residential power users – both contractors and residents participated.
- Focus groups among homeowners with photovoltaic systems, real estate professionals, and city/county permitting and inspection officials concerning barriers to and solutions pertaining to photovoltaic system installation and ownership.

## **Expert Witness: Survey Research and Statistical Analysis**

### **Seyfarth Shaw, LLP**

- Analyzed and testified as expert witness
  - Ikon Office Solutions regarding overtime and meal break survey
  - Orange County Register regarding adequacy of statistical survey sampling of and statistical conclusions drawn from employees
  - Kaiser Permanente (2 cases) – pharmacy managers
  - Bank of America—employee overtime

### **Sheppard, Mullin, Richter & Hampton, LLP**

- Expert witness regarding statistical surveys and labor-hour issues in class action litigation (Bank of America).
- Expert Witness regarding employee claims for clothing expense reimbursement (Wet Seal)
- Expert witness: Loan Depot

### **Higgs, Fletcher & Mack, LLP**

- Analyzed and testified (deposition) as expert witness regarding statistical survey concerning appraisal of commercial real estate subject to condemnation.

**Paul, Plevin, Sullivan & Connaughton, LLP**

- Contracted as expert witness regarding adequacy of statistical survey sampling of and statistical conclusions drawn from employees—2 cases (Kelly Services, Inc. –declaration--and one other settled prior to any declaration being filed that cannot, therefore, be disclosed)

**Akins, Gump, Strauss, Hauer & Feld**

- Contracted as expert witness regarding adequacy of statistical survey sampling and conclusions drawn from employees in labor-hour class action (CVS Pharmacy, Inc.).

**Economic, Financial, and Fiscal Impact Analyses**

**State of California (Senate Rules Committee, Senate Select Committee on Border Issues, and Office of the Auditor General)**

- Analysis of fiscal impact of undocumented immigrants on public services in San Diego County, including criminal justice system, education, and public health. Further identified estimated number of undocumented residents and their contributions to State and local tax revenues. Included in the analysis were federal revenues, false documentation issues, and macro-economic impacts. Study included substantial primary data gathering techniques, including direct interviews with undocumented immigrant workers and INS returnees for purposes of determining employment characteristics, revenue generation, demographics, and migration patterns.

**California Department of Transportation**

- Prepared growth inducement study for State Route 56 through the northern portion of the City of San Diego. Study included fiscal impacts as well as housing, employment, and income forecasts; also included were planning implications of possible growth inducing factors associated with the construction of the highway.

**San Diego Unified School District**

- Economic analysis of impacts on project cost and employment associated with using Project Stabilization Agreements for construction projects.

**San Diego County Taxpayers' Association**

- Prepared economic and financial analysis of San Diego County Multiple Species Conservation Program for presentation to Planning Commission, City Council,

and Board of Supervisors, including imposition of fee required to assemble the land.

- Prepared analysis of economic effects of proposed San Diego development impact fee program. Study included both academic, theoretical analysis and practical fiscal impact considerations.
- Written analysis and critique of Planned Growth and Taxpayer Relief Initiative – Development Impact Fee proposal for consideration before San Diego City Council.
- Fiscal Impact Analysis of Olivenhein Dam project of San Diego County Water Authority
- Prepared general fiscal impact analysis of mobile home rent control ordinances in State of California.

### **Westfield Shopping Centers**

- Analysis of proposed City of San Diego Affordable Housing Impact Fee, including recalculation and allocation among land uses
- Analysis of potential sales and fiscal impact due to expansion of University Town Center, La Jolla, CA

### **San Diego Aircraft Carrier Museum Foundation**

- Prepared fiscal impact analysis regarding the establishment of the USS Midway aircraft carrier museum on San Diego Bay.

### **Pardee Construction Company**

- Prepared Economic Impact Analysis of proposed all-cargo airport at Brown Field, including job creation and related industrial/commercial/visitor development
- Prepared Economic/Fiscal Impact Analysis of 2,650 acre “high-end” Pacific Highlands Ranch residential development in Carmel Valley area of San Diego. Included determination of impact fees.

### **Westbrook Development**

- Economic/Fiscal Impact Analysis of 2,550 acre residential/ commercial/resort development at Fanita Ranch in Santee. Included determination of impact fees for the development and alternative use as open space.

### **Genstar Development**

- Economic/Fiscal Impact Analysis of 3,000 acre 4S Ranch residential/commercial development in San Diego County. Included determination of development impact fees.

### **San Diego Gas & Electric**

- Analysis of feasibility and fiscal impact of City of San Marcos proposal to form and operationalize its own municipal utility—Discovery Valley Utility
- Environmental/Fiscal analysis of San Diego Gas & Electric’s 2004 Energy Resource Plan.
- Economic analysis of Sunrise PowerLink to Imperial County
- Analysis of fiscal impact of Carlsbad agricultural protection measures proposed on 2006 ballot
- Development of economic impact and fiscal model applicable to Sunrise PowerLink, smart meters, ECO substation, South Bay Substation, Dynamic pricing, and renewable energy development)

### **Southern California Gas Company**

- Economic Impact Analysis of billion dollar Pipeline Safety Enhancement Program in 13 counties in California
- Economic Impact Analysis of billion dollar Southern Gas Reliability Project in 4 Southern California counties.

### **Southwest Strategies, LLC**

- Fiscal Impact analysis for potential rezoning of industrial land to residential in Oceanside, California—determined and compared impact fees for industrial and residential use, including transportation impact fees.
- Analysis of proposed City of San Diego Affordable Housing Impact Fee, including recalculation and allocation among land uses.
- Socio-economic profile of residents of 5 affordable housing developments in the City of Poway, including demographics, spending, impacts on crime, schools, property values
- Examination of financial implications of rezoning Old Town National City to remove non-conforming industrial uses

### **Shea Properties**

- Fiscal impact of proposed redevelopment of Barrio Logan with Mercado and affordable housing in San Diego.

- Fiscal impact of second project planned for Barrio Logan

### **Pacifica Companies**

- Community impact analysis of proposed coastal hotel/resort in San Diego County. Included fiscal impact, economic impact, new market tax credit analysis and employment generation.

### **Laing Urban**

- Fiscal Impact analysis for potential rezoning of industrial land to residential in Culver City, California-- determined and compared impact fees for industrial and residential use, including transportation impact fees

### **San Diego-Imperial Counties Labor Council AFL-CIO**

- Analysis of San Diego County Water Authority-Imperial Irrigation District water transfer in terms of environmental and economic obstacles faced and economic development opportunities to be derived from funds to be available within the Imperial Valley.

### **WESTEC Services, Inc.**

- Prepared socioeconomic present condition, impact, and mitigation sections of Environmental Impact Report for California State Prison and San Diego County jail and honor camp at Otay Mesa. Also prepared project description and statement of needs chapter, crime rate and socioeconomic hazards sections.

### **Mooney & Associates**

- Prepared socioeconomic present condition, impact, and mitigation sections of economic impact report for expansion of San Diego County jail in Santee. Also prepared project description and statement of needs chapter, crime rate and socioeconomic hazards sections.

### **Joint Labor Management Committee of the Retail Food Industry**

- Analysis of impacts of large “big box” retailers upon existing merchants. Particular emphasis upon downtown impacts and planning consequences in light of movement toward smart growth. San Diego’s City of Villages strategy was assessed in this regard.
- Economic Impact of supercenter retail development upon California jobs, health and welfare expenditures, and general economic conditions.

### **City of San Diego**

- Determined shopping needs and level of improvement or decline in North Park community since the implementation of the Main Street Historic Preservation Program.
  - Analysis of market for existing condominium developments in downtown San Diego. Detailed analysis included extensive survey and corresponding statistical and qualitative analysis including recommendations for future market composition.
  - Consultant for the revitalization of an older commercial retail area in mid-city San Diego seeking to rejuvenate its retail base. Final report included a recommended retail structure for the community that would be realistic, implementable, and sensitive to the diversity of ethnicity in this community.

### **La Jolla Band of Mission Indians**

- Marketing and management consultants for Sengme Oaks Water Park, a water theme amusement park in Northern San Diego County. Prepared formal marketing and management plans for the Park.

### **Merrill Lynch Commercial Real Estate**

- Provided a variety of on-going property valuation and real estate consultative services including improved and unimproved real property appraisals and land use feasibility planning for large acreage.

### **City of Carlsbad**

- Analyzed future urban commercial development in fast growing Northern San Diego County city.

### **Chelsea Investments, Inc./Border Communities Capital Corporation**

- Analysis of job creation for three development proposals: Children's Village in San Diego, child care facilities and four-story offices in San Diego, and residential/commercial development in San Luis Rio Colorado, AZ.

### **Stirling Enterprises**

- Fiscal Impact analysis of proposal to rezone parcel of industrial land into multiple residential in Oceanside, California--determined and compared impact fees for industrial and residential use, including transportation impact fees
- Projected Jobs-Housing equilibrium point for City of Oceanside



### **Viejas Enterprises**

- Socio-economic analysis of proposal to locate Indian casino in City of Calexico, California
- Socio-economic/fiscal impact analysis of tribal casino in Alpine, California

### **Foxwoods/Pauma Development**

- Multiplier, Housing Needs, Employment, Crime, Pathological Gambling analyses for casino development in northern San Diego County

### **County of Orange**

- Prepared, implemented, and analyzed study of unincorporated area (North Tustin) in order to assess level of service satisfaction issues and potential annexation/sphere of influence and fee adjustments.

### **Housing Solutions**

- Socio-economic profile of residents of 5 affordable housing developments in the City of Poway, including demographics, spending, impacts on crime, schools, property values

### **National City Smart Growth Coalition**

- Planning and economic consultant to business owners in National City Westside regarding new land use plan for community.

### **City of Davis**

- Prepared, administered, and analyzed study of Davis, California for purposes of assessing utilization, demand, and tax allocation factors for City of Davis Department of Parks and Recreation in concert with the preparation of the Master Plan.

### **Subway, Inc. and Pacific Century Development**

- Analysis of two sites in Blythe, CA to determine market absorption potential for new hotel/motel developments.

### **City of Holtville**

- Economic consultant to City in process of dissolving Joint Powers Authority in order to secure fair share of proceeds.

### **San Diego Housing Commission**

- In accordance with the City of San Diego SRO Preservation Ordinance, an inventory of all existing guest rooms in the City of San Diego was performed in order to retroactively identify rooms that qualified as single room occupancy hotel rooms as of December 1985, December 1987 and May 1988. The purpose of this survey was to identify a baseline number of such units for presentation purposes. Prepared SRO identification methodologies, computerization formats, statistical analyses, and final report with room-by-room breakdown.

### **Rodney Company/Rancho Guejito**

- Fiscal impact and economic analysis of proposed Multiple Species Conservation Program—North County.
- Fiscal impact and economic analysis of proposed General Plan Update for San Diego County
- Analysis of impact of San Diego County General Plan upon transportation, education, and public safety services in rural San Diego County.
- Economic analysis of impact of protection of arroyo toad from Santa Barbara County to San Diego County

## Richard A. Parker, Ph.D.

### Education

Ph.D.	University of California, Los Angeles (Los Angeles, California) Pacific Western University (Los Angeles, California) Doctor of Philosophy (Business Administration)
M.B.A.	University of California, Berkeley (Berkeley, California) Master of Business Administration
M.C.P.	San Diego State University (San Diego, California) Master of City Planning
B.S.	Brown University (Providence, Rhode Island) University of California, Berkeley (Berkeley, California) Bachelor of Science — Business Administration (Phi Beta Kappa)

### Selected Professional Experience

#### **1985-present** Professor of Practice, School of Public Affairs, San Diego State University

Courses taught: Seminar in Urban Planning Methodologies (undergraduate and graduate), Financing Urban Development (graduate), Quantitative Methods (Statistics) (graduate), Seminar in Quantitative Approaches to Public Administration (graduate), Quantitative Techniques in Urban Planning (graduate), Contemporary Urban Issues (upper division undergraduate), Public Finance (graduate and upper division undergraduate), Seminar in Economics of Urban and Regional Planning (graduate), Public Policy (undergraduate and graduate)

#### **1984-present** President, Rea & Parker Research/Economic Solutions

President/Project Director of survey and market research and economic consulting firm based in San Diego, California, with facilities in Los Angeles and Orange County. Extensive experience in public and urban affairs regarding the collection of primary demographic, attitudinal, and market-related data through survey research and focus group analysis. Highly regarded economic consultant, particularly in the areas of fiscal impact analysis, urban economic development, and site specific commercial, retail, and residential evaluation.

**Selected Survey Research Clients include State of California, San Diego County, Orange County, Imperial County, Cities of San Diego, Escondido, Carlsbad, Oceanside, Poway, Davis, Holtville, and Dana Point, SANDAG, SCAG, IVAG, San Diego MTS, Orange County Transportation Authority, Los Angeles County MTA, Southern California Regional Rail Authority (Metrolink), Bay Area Rapid Transit, Imperial Valley Transit, Santa Clarita Transit, CALTRANS, San Diego County Water Authority, Otay Water District, San Diego Housing Commission, San Diego Unified School District, California Center for Sustainable Energy.**

**Expert witness regarding survey research and statistical analysis for Bank of America, Kaiser Permanente, NASSCO/General Dynamics, Ikon Office Equipment, Orange County Register/Freedom Communications, CVS Pharmacies, Wet Seal.**

**Economic consultant to Westfield Shopping Centers, San Diego Gas & Electric, Imperial Irrigation District, Viejas Enterprises, Foxwoods Casinos, Retail Food Industry Council, Pardee Homes, Shea Communities, San Diego Aircraft Carrier Museum Foundation, Stirling Cargo Airports, Subway, Inc., Housing Solutions Alliance, San Diego County Taxpayers Association, among others.**

### Selected Publications:

Designing and Conducting Survey Research: A Comprehensive Guide (with Louis M. Rea, Ph.D., 1992 (2<sup>nd</sup> edition 1997—3<sup>rd</sup> edition 2005). Jossey-Bass, Inc., Publishers, San Francisco.

Awards: Bernays Award of Merit—Specialty Publication—Westfield University Town Center Expansion

## Louis M. Rea, Ph.D.

### **EDUCATION**

- Ph.D. Economics, Public Management (Social Science), The Maxwell School, Syracuse University, 1975
- M.R.P. Master of Regional Planning, The Maxwell School, Syracuse University, 1973
- B.A. Economics, Colgate University, Hamilton, New York 1971  
(Phi Beta Kappa, Cum Laude, Honors in Economics)

### **PROFESSIONAL EMPLOYMENT**

**Professor: School of Public Affairs, San Diego State University, 1975-present**

Graduate Courses Taught: Seminar in Urban and Regional Planning Analysis, Seminar in Urban Transportation Planning, Quantitative Techniques in Urban Planning, Methods of Analysis in Public and Urban Affairs, Seminar in Urban and Fiscal Issues, Principles of Survey Research, and Program Design and Evaluation. Undergraduate Courses Taught: Introduction to Urban Planning, Applied Planning Research and Program Evaluation in Criminal Justice Administration, and Management of Urban Governments.

**Director: School of Public Administration and Urban Studies, 1983-2006.**

Responsible for the management and direction of the School of Public Administration and Urban Studies, consisting of 40 employees, including 30 full time and part time faculty, and 10 support and research staff; responsible for managing the School's resources valued at approximately \$4.0 million, consisting of funds in the areas of personnel, supplies and services, computer hardware, scholarships, endowments, and SDSU Foundation accounts; provide supervision of all personnel matters, including recruitment and hiring of full and part-time faculty as well as staff positions; oversee reappointment, tenure, and promotion process; schedule classes; prepare and implement school's academic strategic plan, business plan, student learning goals and objectives, and faculty hiring practices; responsible for fund raising and development.

**Vice President and Principal Consultant: Rea and Parker Research/Economic Solutions, 1984-present**

Provide professional consulting services to client agencies (both public and private) seeking research data and studies for executive decision making. Provide services in the areas of transportation research including on-board bus and rail surveys, survey research associated with customer satisfaction and market feasibility analysis, economic and fiscal impact analysis, program evaluation, and public policy analysis including land use, housing, immigration, and tourism.

Selected clients include State of California, San Diego County, Orange County, and Imperial County; cities of San Diego, Escondido, Carlsbad, Poway, and Davis; authorities including SANDAG, SCAG, San Diego MTS, Orange County Transportation Authority, Los Angeles County MTA, Southern California Regional Rail Authority, San Diego County Water Authority, Otay Water District and CALTRANS.

**Visiting Professor: University of California, San Diego, Graduate School of International Relations and Pacific Studies, 2006-present.**

Teach a required graduate course in program design and evaluation to students pursuing a Master's Degree in International Relations.

### **PUBLICATION**

*Designing and Conducting Survey Research: A Comprehensive Guide.* Jossey-Bass, Inc., San Francisco, 1992 -- 2<sup>nd</sup> edition, 1997; 3<sup>rd</sup> edition, 2005 (with Richard A. Parker).