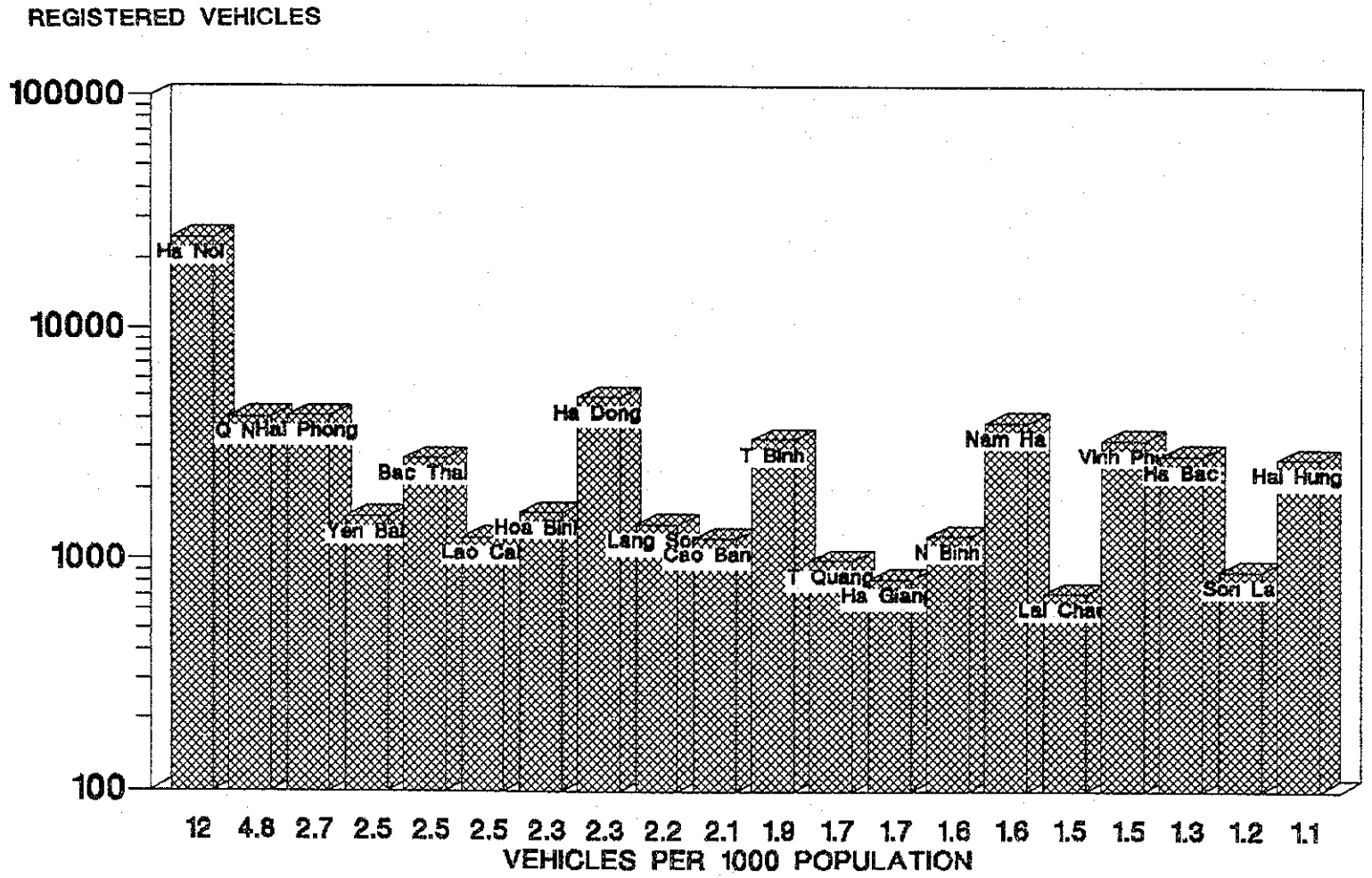
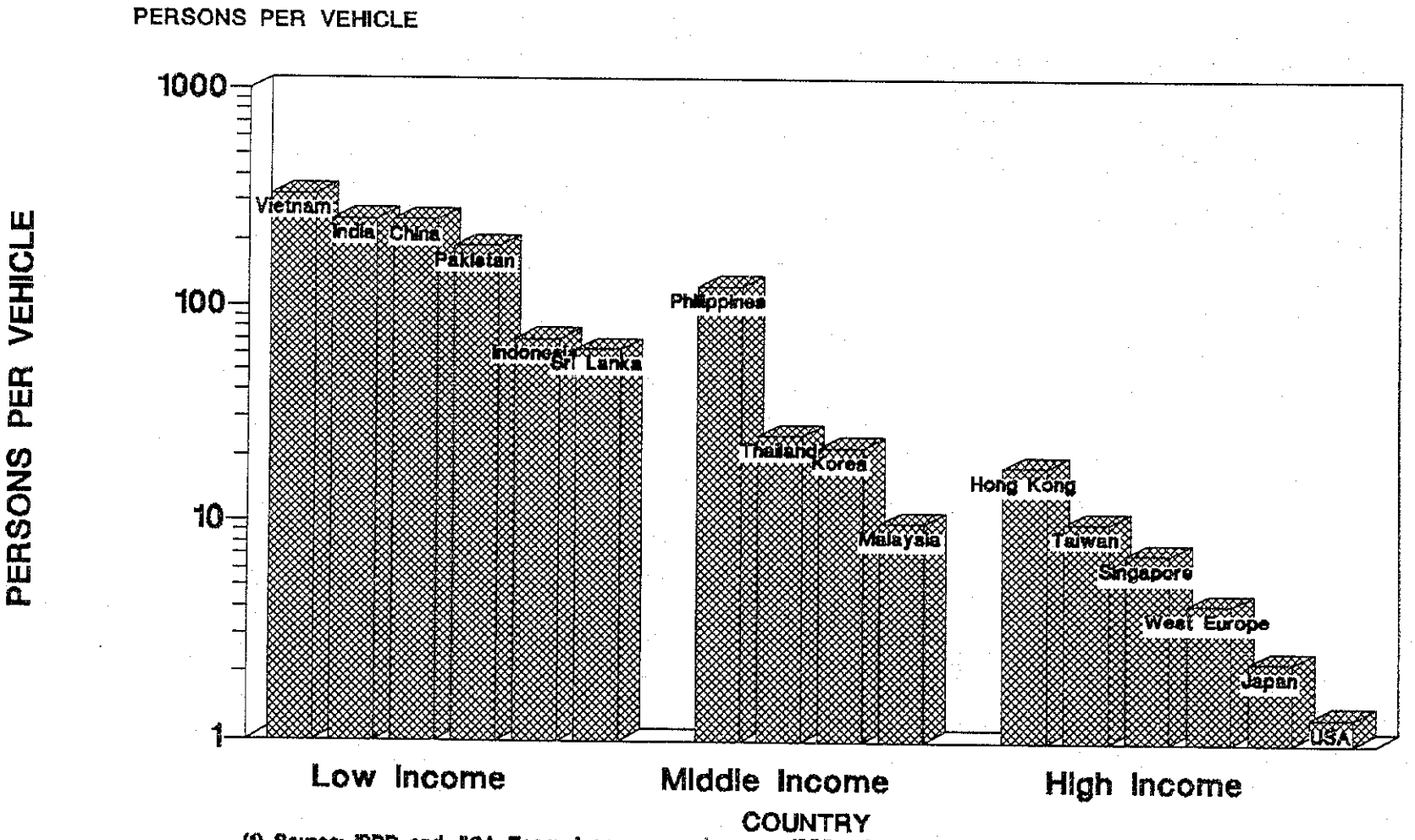
Appendix



(1) Compsite average: 2.8 vehicles per 1000 persons.

Figure A.1 1991 Vehicle Ownership Pattern Northern Vietnam



(1) Source: IBRD and JICA Team. Income groupings per IBRD criteria.
(2) Vietnam data based on 1991 vehicle registrations, other nations 1988 data.

Figure A.2 Global Motorization Overview

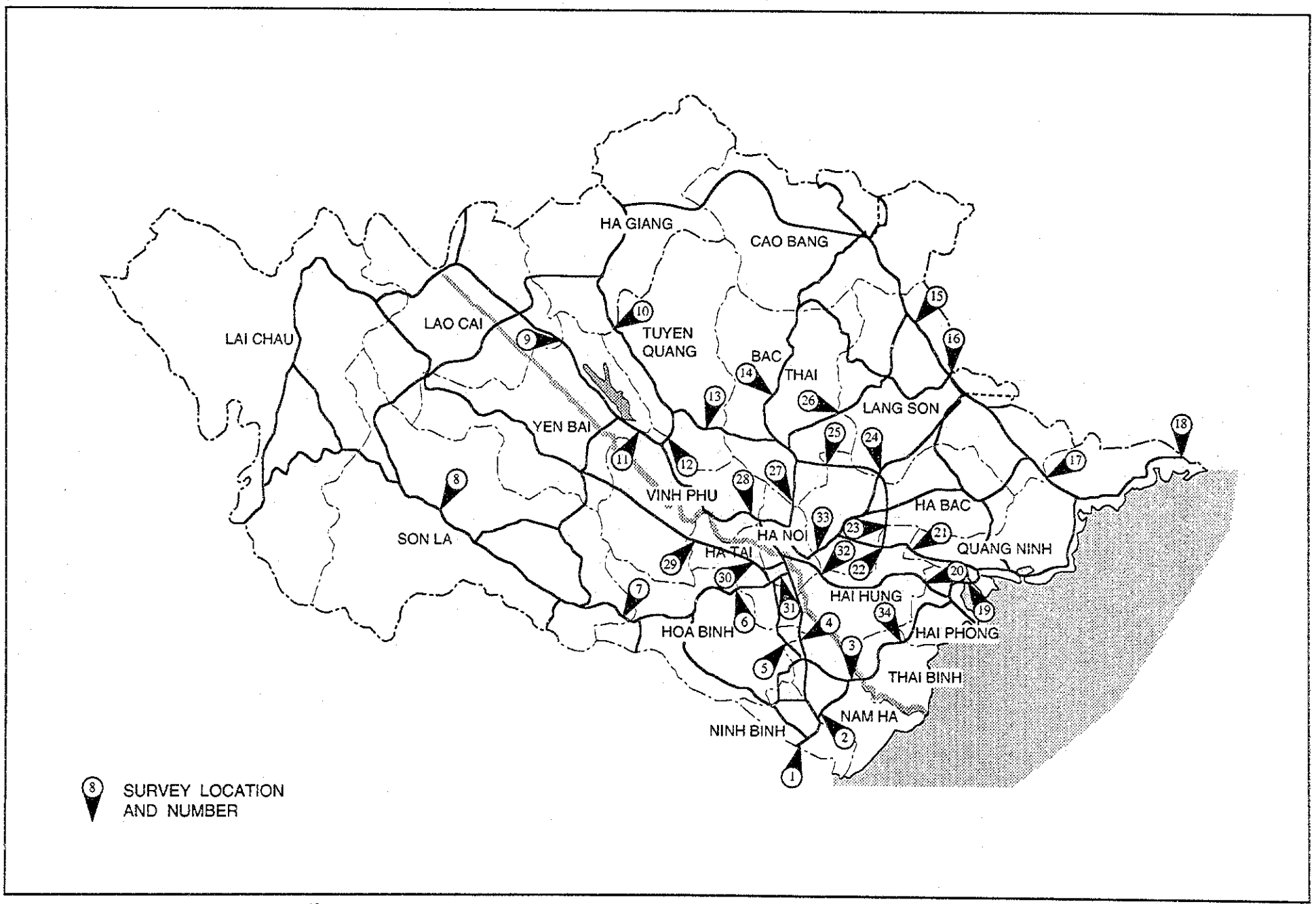


Figure A.3 Station Locations Roadside Interview and Count Survey

Table A.1 Roadside Survey Locations Northern Vietnam Transport Study

SITE NUMBER(2)	APPROXIMATE LOCATION	ACTIVITY (1) 16-Hour Traffic Count	24-Hour Traffic Count	2*16 Hr Traffic Count	16-Hr O-D Survey
1	QL 1 North of Bim Son	*			*
2	QL 10 North of Ninh Bin	*			*
3	QL 10 East of Nam Dinh	*			
4	QL 1 South of Phu Xuyen		*		
5	QL 21 East of Lac Thuy	*			
6	QL 6 East of Luong Son			*	*
7	QL 6 West of QL 15	*			
8	QL 6 near Thuan Chau	*			
9	QL 70 South of Bao Yen	*			*
10	QL 2 South of Vinh Tuy	*			*
11	QL 70 between QL 379 (West) and QL 379 (East)	*			
12	QL 2 North of QL 70	*			
13	QL 379 East of Son Duong	*			
14	QL 3 North of Phu Luong	*			
15	QL 4A South of That Khe	*			
16	North of Dong Dang	*			
17	QL 4B North of Tien Yen	*			
18	Near Mong Cai	*			
19	QL 10; ferry West of Yen Hung	*			
20	QL 5 West of Quan Tanh		*		
21	QL 18 West of Mao Khe	*			
22	QL 18 at ferry near Pha Lai			*	
23	QL 379 at railway crossing South of Luc Nam	*			
24	QL 1 North of Kep	*			
25	QL 379 East of Trai Cau	*			
26	QL 1B North of Vo Nhai	*			
27	QL 3 South of Pho Yen		*		
28	QL 2 West of Phuc Yen		*		
29	QL 32 North of Son Tay	*			
30	QL 32 East of Ban Phuong			*	
31	QL 6 between HaDong and Hanoi		*		
32	QL 5 West of Mi Van			*	
33	QL 1 South of Tien Son			*	
34	QL 10 South of Vinh Bao	*			

(1) Survey conducted during August, 1993. Sixteen hour survey period extended from 0600 to 2200 hours. Roadside interview (O-D) survey based on sample of all passing vehicles. Traffic counts monitor 100 percent of passing vehicles, by direction, by 10 vehicle types.
(2) Refer Figure 2.6 for site locations. All counts are placed to coincide with province boundaries.

Table A.2 Daily 1993 Traffic Volume Northern Vietnam Roadway Network

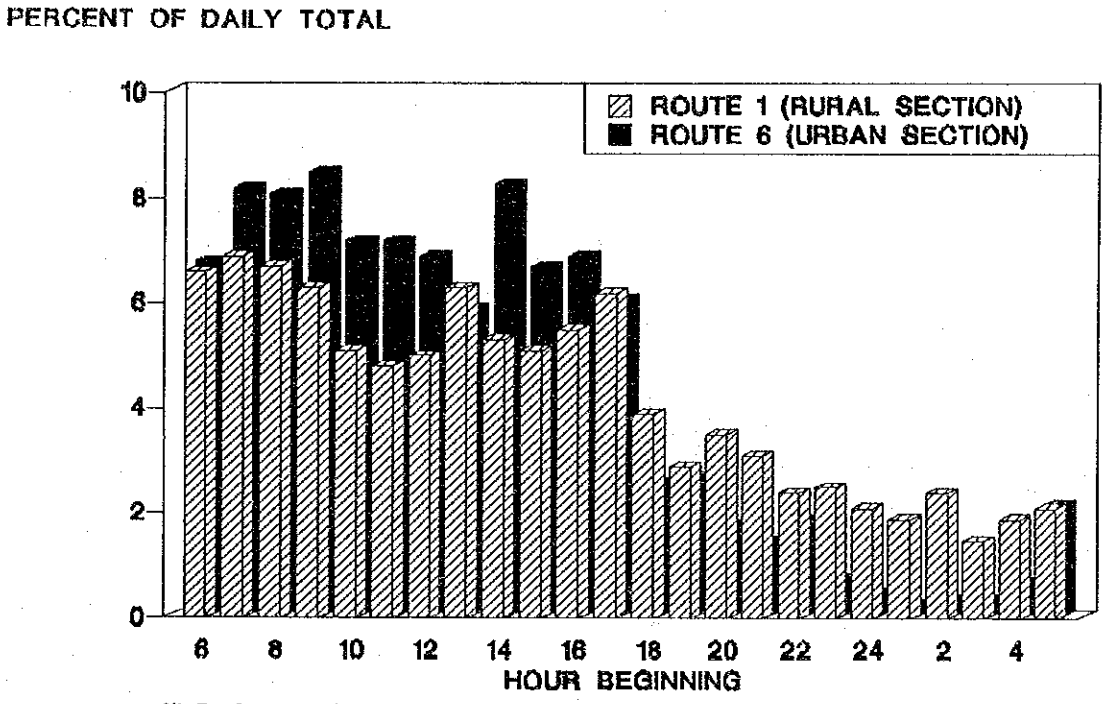
ROUTE	SURVEY POINT(1)	LOCATION (2)	FOUR-WHEELED VEHICLES										TWO-WHEELED VEHICLES		
			Car			Bus	Truck					Grand Total			Grand Total
			Sedan	Van	Subtotal		Pick-up	2 Axles	3 Axles	4+ Axles	Subtotal		Bicycle	MCycle	
1	16	South of Dong Dang	167	18	184	6	21	40	20	0	81	271	168	3478	3645
	24	North of Kep	232	332	563	102	42	298	86	0	425	1090	1352	937	2289
	33	South of Tien Son	635	597	1232	200	357	716	140	17	1230	2662	5706	7899	13605
	4	South of Phu Xuyen	839	275	1114	646	126	1429	260	31	1846	3606	6300	3815	10115
	1	North of Bim Son	377	123	500	348	59	684	174	9	926	1774	1288	981	2269
1B	26	North of Vo Nhai	3	27	30	22	0	77	6	0	83	135	2379	1408	3788
2	28	West of Phuc Yen	522	72	594	195	125	935	75	17	1152	1941	2974	2611	5585
	12	North of QL 70	93	35	128	63	60	140	17	0	217	408	2300	1698	3999
	10	South of Vinh Tuy	39	18	57	23	3	53	3	0	58	138	464	375	839
3	27	South of Pho Yen	317	128	445	156	74	569	89	10	742	1343	2297	2335	4632
	14	North of Phu Luong	76	24	99	58	14	103	6	0	123	280	192	522	714
4B	15	South of That Khe	11	4	16	5	36	13	0	0	49	70	874	290	1163
	17	North of Tien Yen	0	0	0	0	0	12	3	0	14	14	155	79	234
	18	South of Mong Cai	156	101	256	71	103	211	14	0	328	655	2239	7872	10111
5	32	West of Mi Van	1034	391	1424	281	117	961	161	67	1306	3011	2299	4380	6679
	20	West of Quan Tanh	700	251	951	145	98	945	151	92	1286	2382	3785	2265	6050
6	31	Between Hanoi and Hadong	1069	1194	2263	423	90	1004	112	15	1221	3907	23503	19589	43092
	6	East of Luong Son	203	33	236	93	25	482	60	9	576	905	2880	1408	4288
	7	West of QL 15	38	14	53	19	1	100	3	0	104	176	101	328	430
	8	Near Thuan Chau	32	10	42	14	11	71	0	0	82	138	291	394	685
10	2	North of Ninh Bin	136	77	213	92	94	321	11	0	426	731	6661	2340	9001
	3	East of Nam Dinh	146	187	333	105	237	346	21	0	604	1042	17574	4618	22192
	34	South of Vinh Bao	53	31	84	87	108	194	5	3	310	481	2459	1240	3699
	19	West of Yen Hung	167	81	248	72	14	70	5	1	90	410	1453	1198	2651
18	22	At Pha Lai Ferry	96	24	119	25	49	173	46	8	276	420	1959	1311	3270
	21	West of Mao Khe	197	67	265	122	140	465	67	13	684	1071	2300	1993	4292
21	5	East of Lac Thuy	2	0	2	5	28	25	1	0	54	61	2248	476	2723
32	30	East of Ban Phuong	264	130	394	37	84	249	15	1	349	780	10538	4663	15201
	29	North of Son Tay	76	16	93	31	54	131	19	0	204	328	1578	953	2531
70	11	Near QL 379	156	13	169	42	23	204	18	5	251	462	2134	1850	3984
	9	South of Bao Yen	33	31	64	8	3	35	3	3	43	115	75	108	183
379	13	East of Son Duong	50	4	54	22	32	110	0	0	142	218	3948	1714	5662
	25	East of Trai Cau	6	0	6	0	11	6	0	0	16	22	871	591	1463
	23	South of Luc Nam	0	0	0	0	22	0	0	0	22	22	499	70	569

(1) Refer Figure 2.6 for locations.
(2) Count locations sited to coincide with province boundaries to ensure monitoring on interprovince trips.
Data source: JICA Team field surveys, August 1993.

Table A.3 Traffic Stream Composition Northern Vietnam Roadway Network

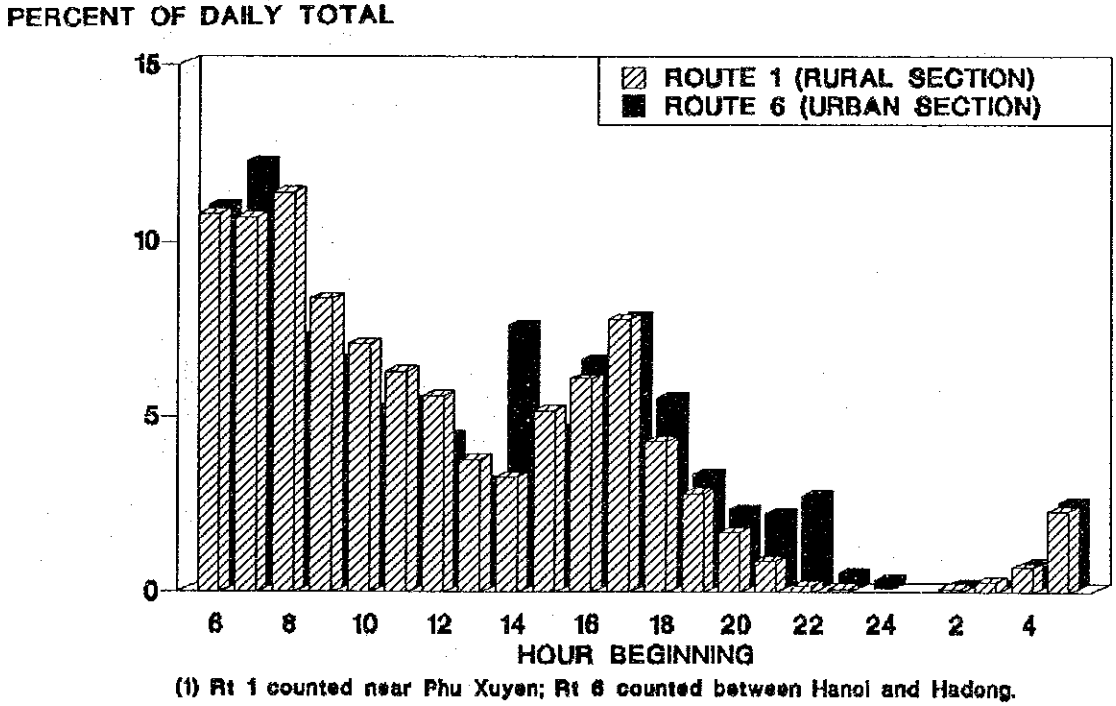
ROUTE	SURVEY POINT(1)	LOCATION	FOUR-WHEELED VEHICLES										TWO-WHEELED VEHICLES		
			Car			Bus	Truck					Grand Total			Grand Total
			Sedan	Van	Subtotal		Pick-up	2 Axles	3 Axles	4+ Axles	Subtotal		Bicycle	MCycle	
1	16	South of Dong Dang	61.6	6.5	67.9	2.3	7.8	14.6	7.5	0.0	29.9	100.0	4.6	95.4	100.0
	24	North of Kep	21.2	30.4	51.7	9.4	3.8	27.3	7.8	0.0	39.0	100.0	59.0	40.9	100.0
	33	South of Tien Son	23.8	22.4	46.3	7.5	13.4	26.9	5.3	0.6	46.2	100.0	41.9	58.1	100.0
	4	South of Phu Xuyen	23.3	7.6	30.9	17.9	3.5	39.6	7.2	0.9	51.2	100.0	62.3	37.7	100.0
	1	North of Bim Son	21.2	6.9	28.2	19.6	3.3	38.6	9.8	0.5	52.2	100.0	56.8	43.2	100.0
1B	26	North of Vo Nhai	2.3	19.8	22.2	16.3	0.0	57.0	4.7	0.0	61.5	100.0	62.8	37.2	100.0
2	28	West of Phuc Yen	26.9	3.7	30.6	10.0	6.4	48.2	3.9	0.9	59.4	100.0	53.2	46.8	100.0
	12	North of QL 70	22.9	8.6	31.4	15.5	14.8	34.3	4.1	0.0	53.2	100.0	57.5	42.5	100.0
	10	South of Vinh Tuy	28.5	12.7	41.3	16.8	2.3	38.0	1.8	0.0	42.0	100.0	55.3	44.7	100.0
3	27	South of Pho Yen	23.6	9.5	33.1	11.6	5.5	42.4	6.6	0.7	55.2	100.0	49.6	50.4	100.0
	14	North of Phu Luong	27.0	8.5	35.4	20.6	4.9	36.7	2.3	0.0	43.9	100.0	26.9	73.1	100.0
4B	15	South of That Khe	16.3	5.9	22.9	7.5	51.5	18.3	0.0	0.0	70.0	100.0	75.1	24.9	100.0
	17	North of Tien Yen	0.0	0.0	0.0	0.0	0.0	83.3	18.2	0.0	100.0	100.0	66.2	33.8	100.0
	18	South of Mong Cai	23.7	15.4	39.1	10.9	15.7	32.2	2.1	0.0	50.1	100.0	22.1	77.9	100.0
5	32	West of Mi Van	34.3	13.0	47.3	9.3	3.9	31.9	5.4	2.2	43.4	100.0	34.4	65.6	100.0
	20	West of Quan Tanh	29.4	10.5	39.9	6.1	4.1	39.7	6.3	3.9	54.0	100.0	62.6	37.4	100.0
6	31	Between Hanoi and Hadong	27.4	30.6	57.9	10.8	2.3	25.7	2.9	0.4	31.3	100.0	54.5	45.5	100.0
	6	East of Luong Son	22.4	3.7	26.1	10.3	2.7	53.3	6.7	1.0	63.6	100.0	67.2	32.8	100.0
	7	West of QL 15	21.8	8.2	30.1	10.7	0.6	57.0	1.4	0.0	59.1	100.0	23.5	76.4	100.0
	8	Near Thuan Chau	23.3	7.5	30.4	9.9	7.7	51.6	0.0	0.0	59.4	100.0	42.5	57.5	100.0
10	2	North of Ninh Bin	18.7	10.5	29.1	12.5	12.8	43.9	1.5	0.0	58.3	100.0	74.0	26.0	100.0
	3	East of Nam Dinh	14.0	17.9	32.0	10.0	22.8	33.2	2.1	0.0	58.0	100.0	79.2	20.8	100.0
	34	South of Vinh Bao	11.0	6.4	17.5	18.1	22.5	40.3	1.1	0.6	64.4	100.0	66.5	33.5	100.0
	19	West of Yen Hung	40.7	19.8	60.5	17.6	3.4	17.1	1.2	0.2	22.0	100.0	54.8	45.2	100.0
18	22	At Pha Lai Ferry	22.8	5.6	28.3	6.0	11.8	41.2	11.0	1.8	65.7	100.0	59.9	40.1	100.0
	21	West of Mao Khe	18.4	6.3	24.7	11.4	13.1	43.4	6.2	1.2	63.9	100.0	53.6	46.4	100.0
21	5	East of Lac Thuy	3.5	0.0	3.3	9.0	46.2	40.7	2.3	0.0	88.5	100.0	82.5	17.5	100.0
32	30	East of Ban Phuong	33.9	16.7	50.5	4.8	10.8	31.9	1.9	0.1	44.7	100.0	69.3	30.7	100.0
	29	North of Son Tay	23.3	5.0	28.4	9.5	16.5	40.0	5.6	0.0	62.2	100.0	62.3	37.6	100.0
70	11	Near QL 379	33.7	2.9	36.6	9.1	5.1	44.2	3.9	1.2	54.3	100.0	53.6	46.4	100.0
	9	South of Bao Yen	28.8	26.9	55.7	7.3	2.8	30.4	2.2	2.4	37.4	100.0	40.9	59.1	100.0
379	13	East of Son Duong	22.8	1.9	24.8	10.1	14.6	50.3	0.0	0.0	65.1	100.0	69.7	30.3	100.0
	25	East of Trai Cau	28.3	0.0	27.3	0.0	48.2	26.5	0.0	0.0	72.7	100.0	59.6	40.4	100.0
	23	South of Luc Nam	0.0	0.0	0.0	0.0	100.0	0.0	0.0	0.0	100.0	100.0	87.8	12.2	100.0

(1) Refer Figure 2.6 for locations.
Data source: JICA Team field surveys, August 1993. Refer Table 2.3 for volume totals.



(1) Rt 1 counted near Phu Xuyen; Rt 6 counted between Hanoi and Hadong.

Figure A.4 Hourly Variations in Daily 1993 Traffic Volume Four-Wheeled Vehicles on Rural and Urban Road Segments



(1) Rt 1 counted near Phu Xuyen; Rt 6 counted between Hanoi and Hadong.

Figure A.5 Hourly Variations in Daily 1993 Traffic Volume Two-Wheeled Vehicles on Rural and Urban Road Segments

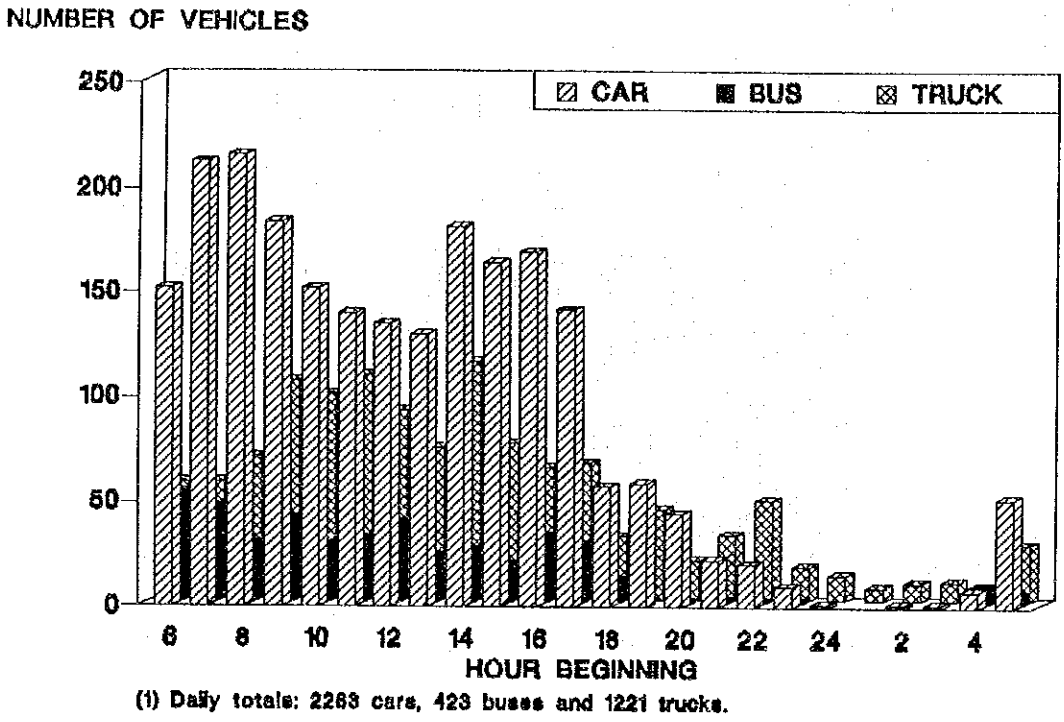


Figure A.6 Modal Variations in Daily 1993 Traffic Volume Four-Wheeled Vehicles, Route 6 Between Ha Noi and Ha Dong

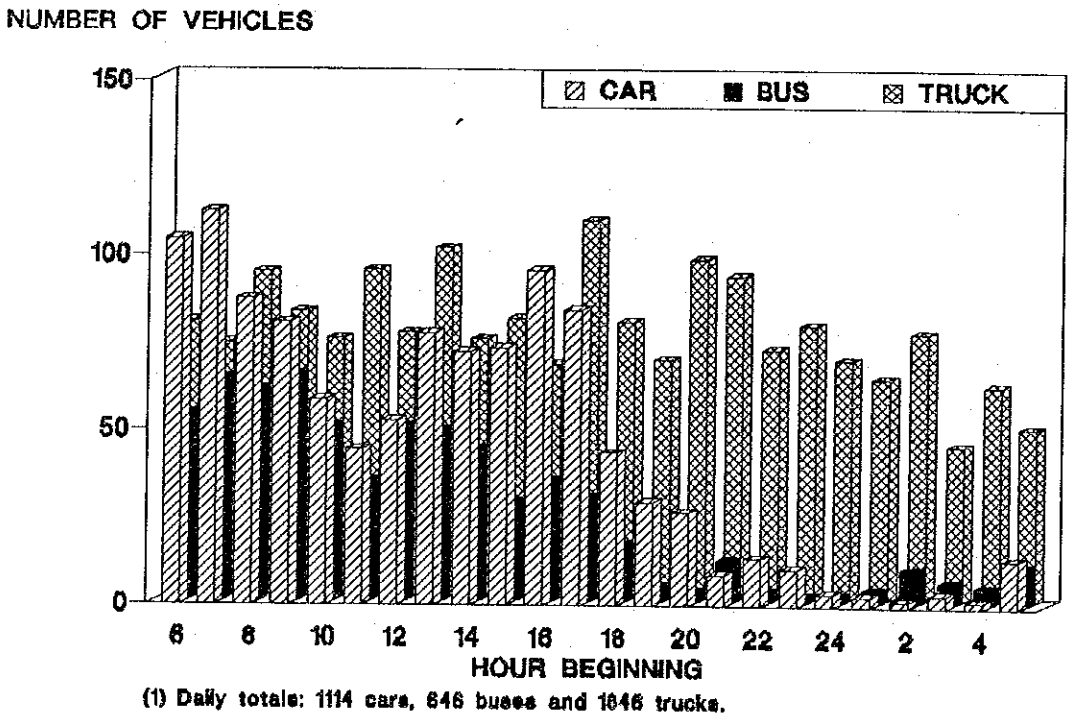


Figure A.7 Modal Variations in Daily 1993 Traffic Volume Four-Wheeled Vehicles, Near Phu Xuyen

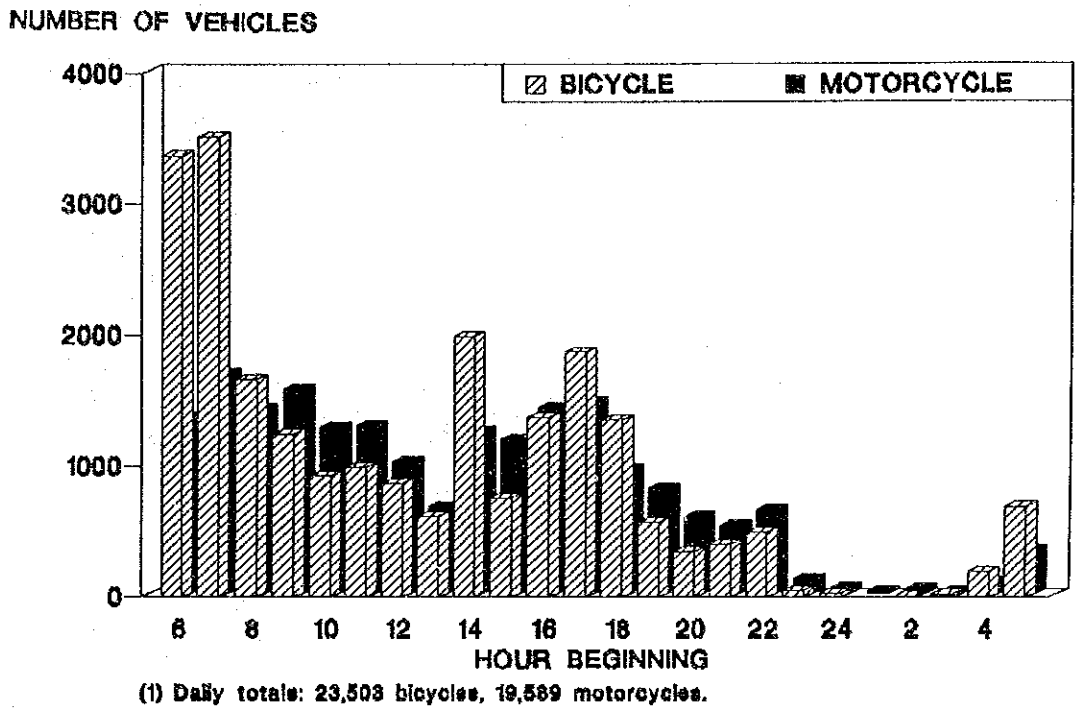


Figure A.8 Modal Variations in Daily 1993 Traffic Volume Two-Wheeled Vehicles, Route 6 Between Ha Noi and Ha Dong

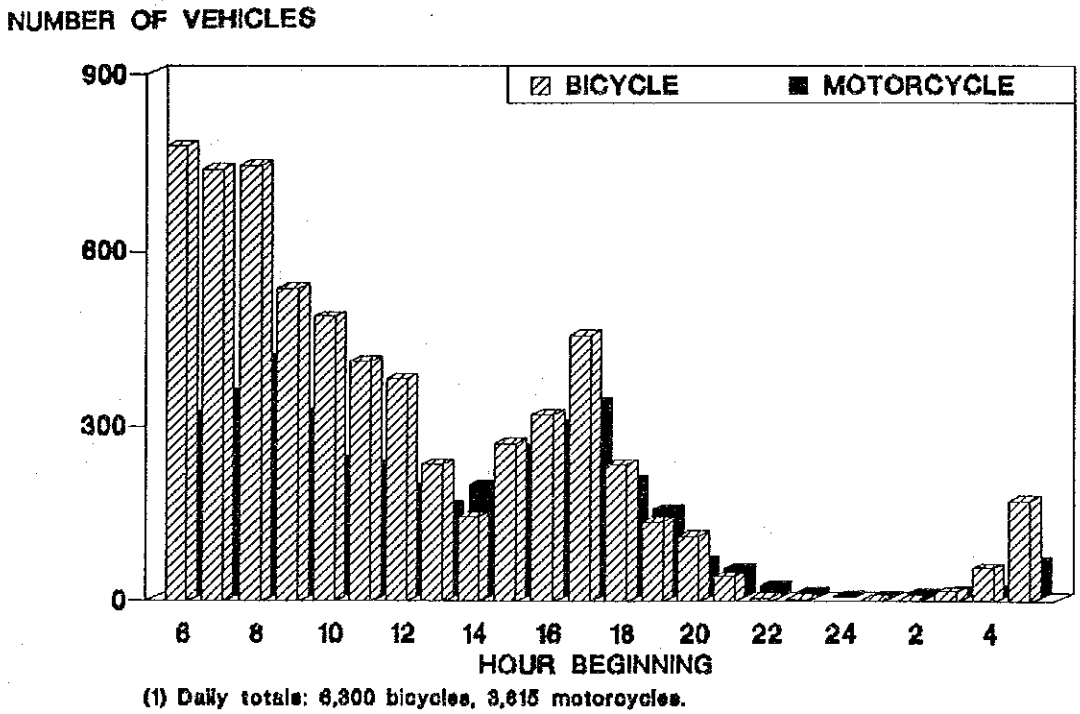
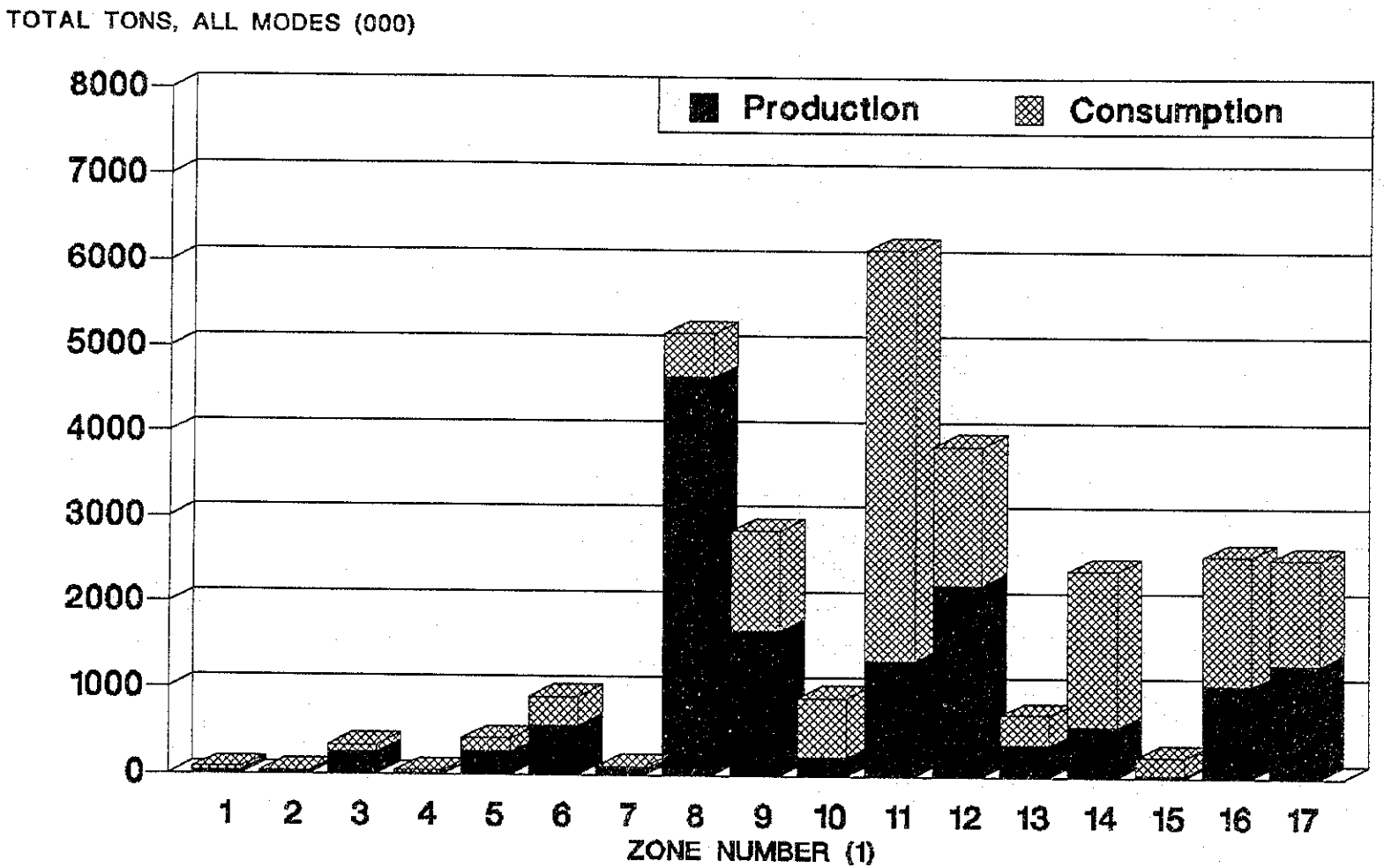
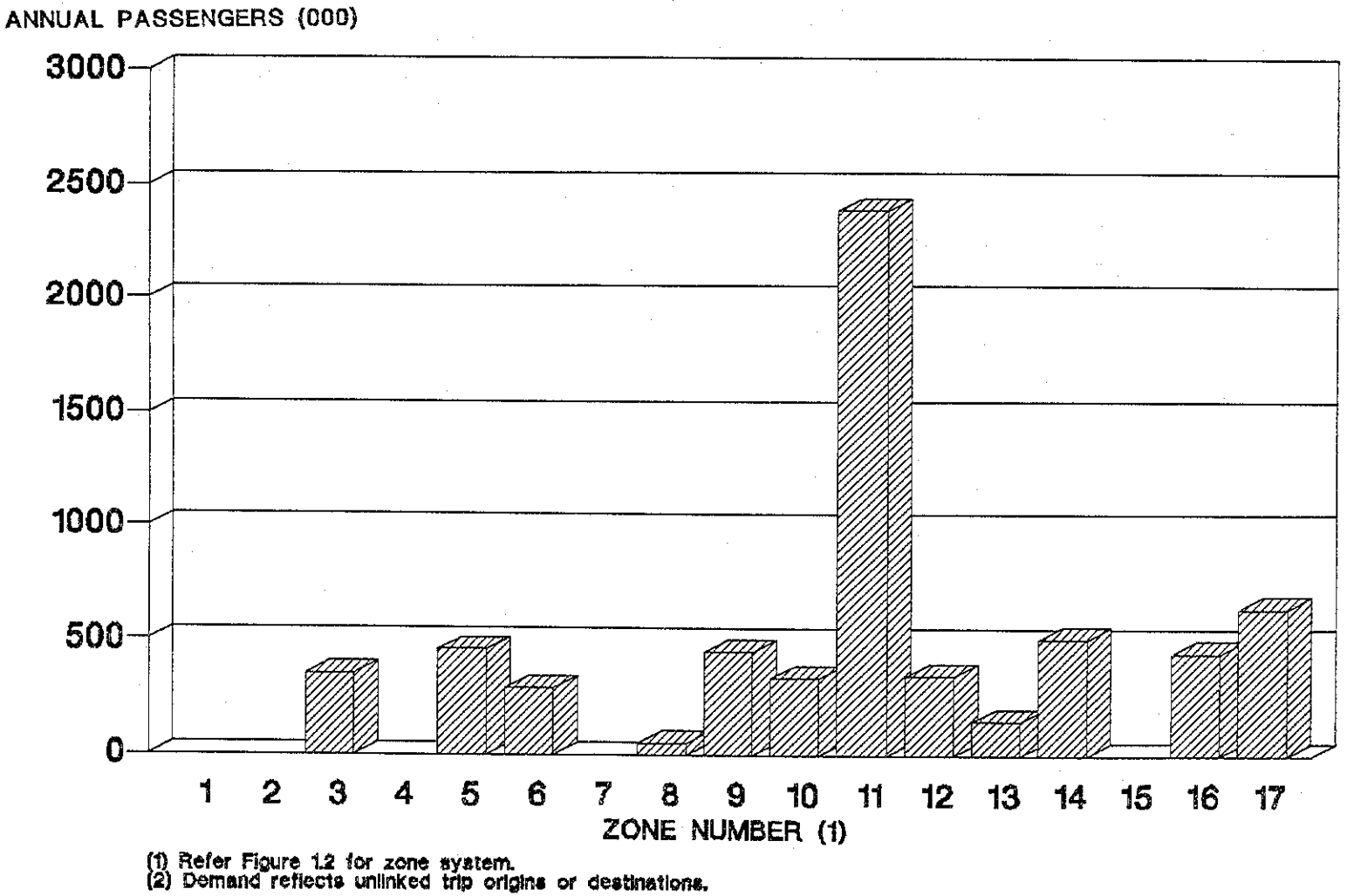


Figure A.9 Modal Variations in Daily 1993 Traffic Volume Two-Wheeled Vehicles, Near Phu Xuyen



(1) Refer Figure 1.2 for zone system.

Figure A.10 Domestic Inter-Province Cargo Flows Northern Vietnam - Year 1991



(1) Refer Figure 1.2 for zone system.
(2) Demand reflects unlinked trip origins or destinations.

Figure A.11 Domestic Inter-Province Rail Passenger Flows
Northern Vietnam - Year 1989

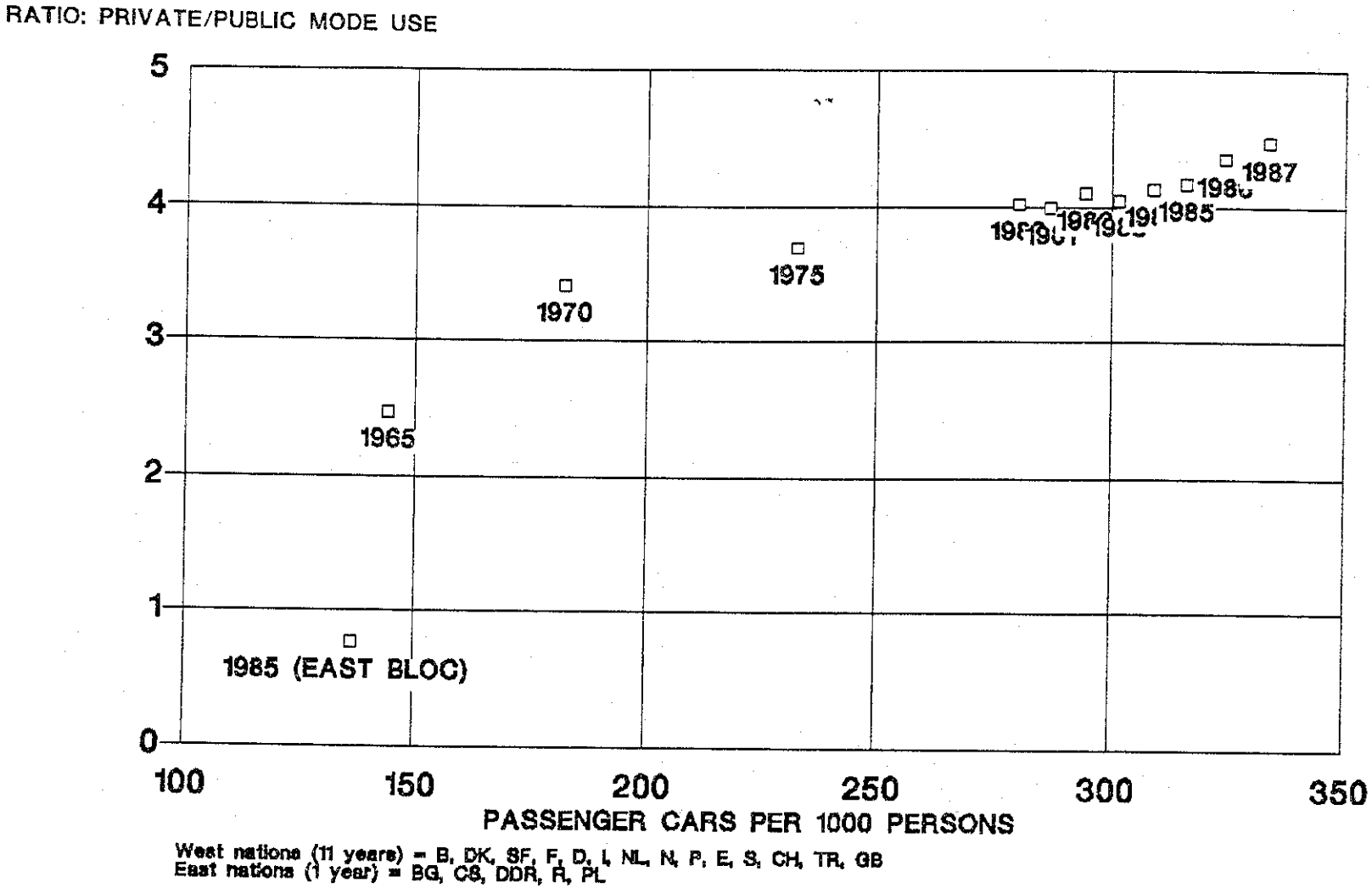


Figure A.12 Historic East and West European Modal Preferences: Passenger Travel

Table A.4 TRANPLAN Assignment Group Codes and Speed Decay Function Northern Vietnam Roadway Network

ASG CODE	ROAD CLASSIFICATION	SURFACE TYPE	WIDTH (M)
0	Centroid Connector (1)	*	*
1	Special Function (2)	*	*
2	Four–lane Freeway (3)	Paved	14.0
3	Multi–lane Rural Arterial	Paved	14.0 (4)
4	Two–lane Rural Arterial	Paved	> 6.5
5	Two–lane Rural Arterial	Paved	5.5 – 6.5
6	Two–lane Rural Arterial	Paved	4.5 – 5.4
7	Two–lane Rural Arterial	Paved	< 4.5
8	Two–lane Rural Arterial	Unpaved	=> 4.5
9	Two–lane Rural Arterial	Unpaved	< 4.5

(1) Link via which zonal trip activity is transferred to/from the roadway network.
(2) Special functions including ferries.
(3) High–order facility with complete control of access. Freeway, motorway and Autobahn are synonymous terms.
(4) Represents ideal width of four–lane carriageway. Roadway inventory data include sections varying from 10 to 18 meters.

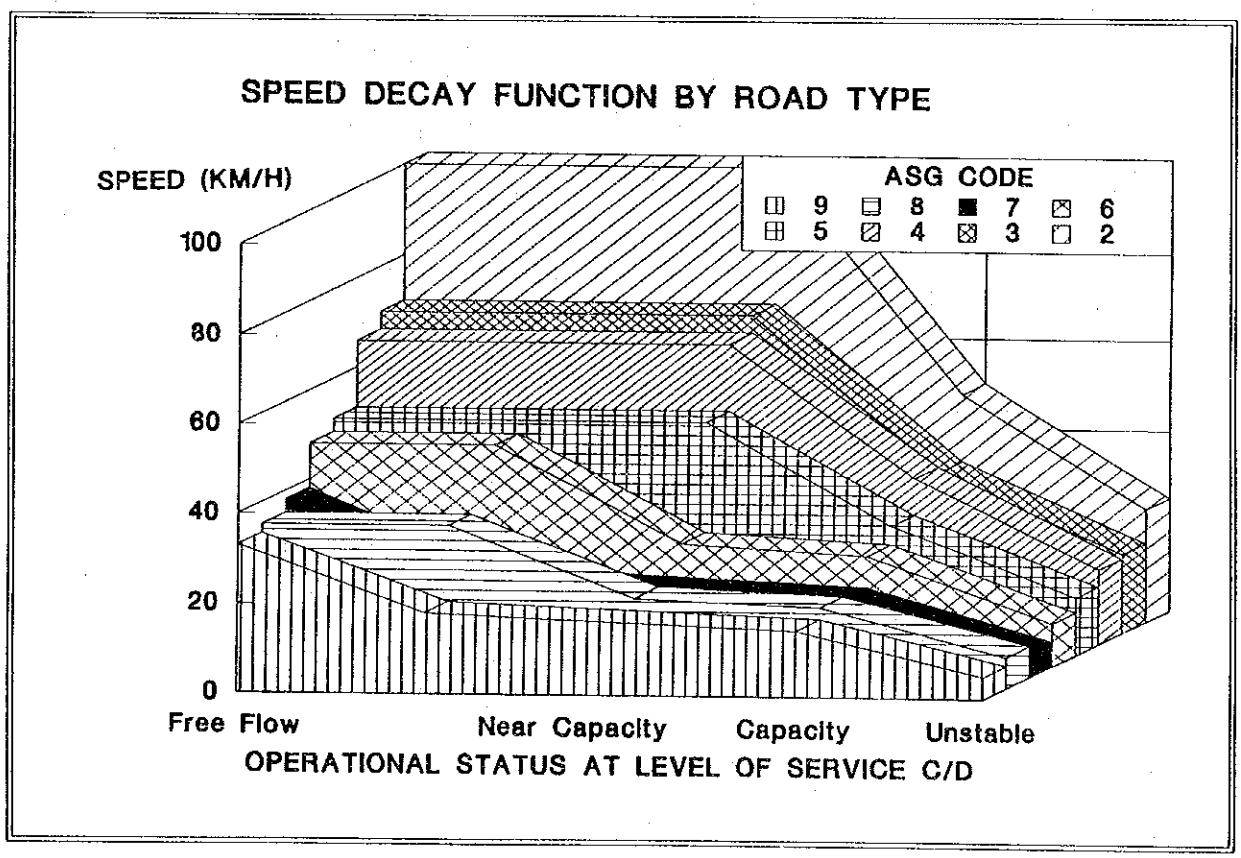


Table A.5 Descriptive Parameters by Road Type Base Year Roadway Network

ASG CODE (1)	ROAD TYPE	TERRAIN TYPE	NUMBER OF LINKS (2)	TOTAL LENGTH (KM)	AVERAGE WIDTH (M) (3)	AVERAGE SPEED (KM/H) (4)	AVERAGE CAPACITY (PCU) (5)
2	Freeway (6)	Flat	–	–	–	–	–
		Rolling/Hilly	–	–	–	–	–
		Mountainous	–	–	–	–	–
	Subtotal and Average		0	0.0	0.0	0	0
3	Multi–lane Paved Arterial (7)	Flat	14	82.6	14.6	71	56500
		Rolling/Hilly	4	10.0	12.3	66	50000
		Mountainous	0	–	–	–	–
	Subtotal and Average		18	92.6	14.1	70	55000
4	Two Lane Paved Arterial (Width > 6.5 m)	Flat	46	304.9	7.3	68	22600
		Rolling/Hilly	31	206.9	7.4	63	19900
		Mountainous	0	–	–	–	–
	Subtotal and Average		77	511.8	7.4	66	21500
5	Two Lane Paved Arterial (Width 5.5 – 6.5 m)	Flat	54	428.7	5.8	53	16100
		Rolling/Hilly	58	415.1	5.8	50	14400
		Mountainous	11	123.0	5.5	46	11300
	Subtotal and Average		123	966.8	5.8	51	14900
6	Two Lane Paved Arterial (Width 4.5 – 5.4 m)	Flat	16	109.1	5.0	50	12100
		Rolling/Hilly	27	262.8	5.0	47	10900
		Mountainous	2	8.0	5.0	44	9500
	Subtotal and Average		45	379.9	5.0	48	11300
7	Two Lane Paved Arterial (Width < 4.5 m)	Flat	7	9.9	3.8	42	6700
		Rolling/Hilly	24	241.6	3.5	40	4900
		Mountainous	24	342.0	3.5	36	4000
	Subtotal and Average		55	593.5	3.6	38	4700
8	Two Lane Unpaved Arterial (Width =< 4.5 m)	Flat	6	54.0	5.6	37	13900
		Rolling/Hilly	53	658.9	4.9	35	10400
		Mountainous	22	290.0	5.2	34	10300
	Subtotal and Average		81	1002.9	5.0	35	10700
9	Two Lane Unpaved Arterial (Width < 4.5 m)	Flat	11	132.0	4.0	35	7700
		Rolling/Hilly	40	450.5	3.8	34	5800
		Mountainous	39	439.0	3.6	31	4300
	Subtotal and Average		90	1021.5	3.7	33	5400
TOTAL AND AVERAGE			489	4569.0	5.5	46	11500

Data sources: field surveys by JICA Team (1993), "National Transportation Sector Review" road inventory (1991), and TESI files (1993). All averages are the arithmetic average of link data.

(1) TRANPLAN designation to identify links to which a common capacity restraint is applied.

(2) Total number of two–way links contained in the data inventory. Excludes special links such as centroid connectors and ferry services.

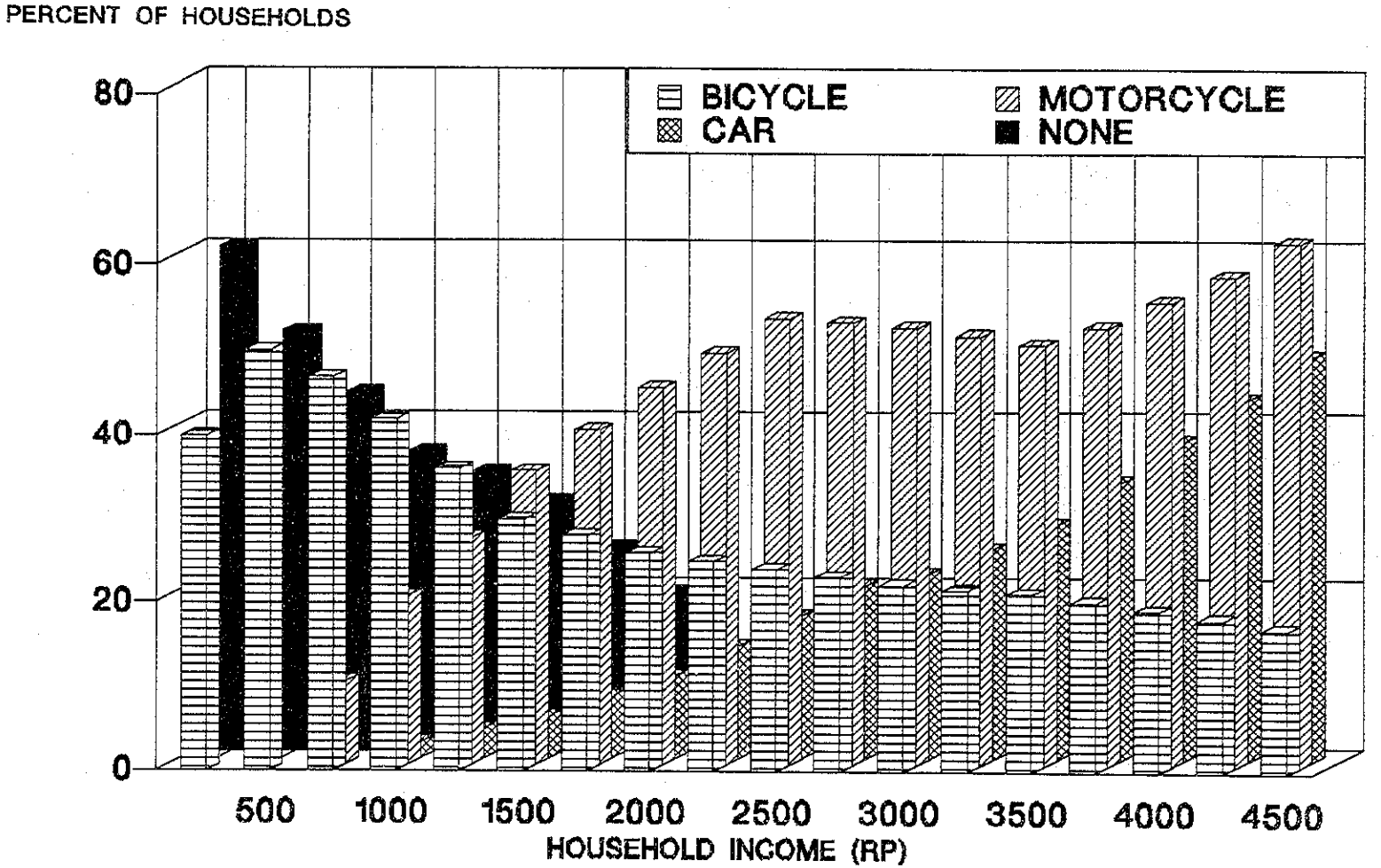
(3) Width of carriageway in meters.

(4) Free – flow speed, or speed at which a vehicle could safely travel in the absence of other traffic.

(5) Daily capacity, both directions of travel, expressed in passenger car units. Stated capacity approximates Level of Service C/D conditions.

(6) Grade separated, access controlled facility in line with standards contained in the "Highway Capacity Manual". Freeways have not, as yet, been built in Vietnam.

(7) Arterial of sufficient width to accommodate four or six travel lanes.



Source: "Non-Motorized Vehicles In Asian Cities", The World Bank, 1992

Figure A.13 Vehicle Ownership and Household Income Delhi, India

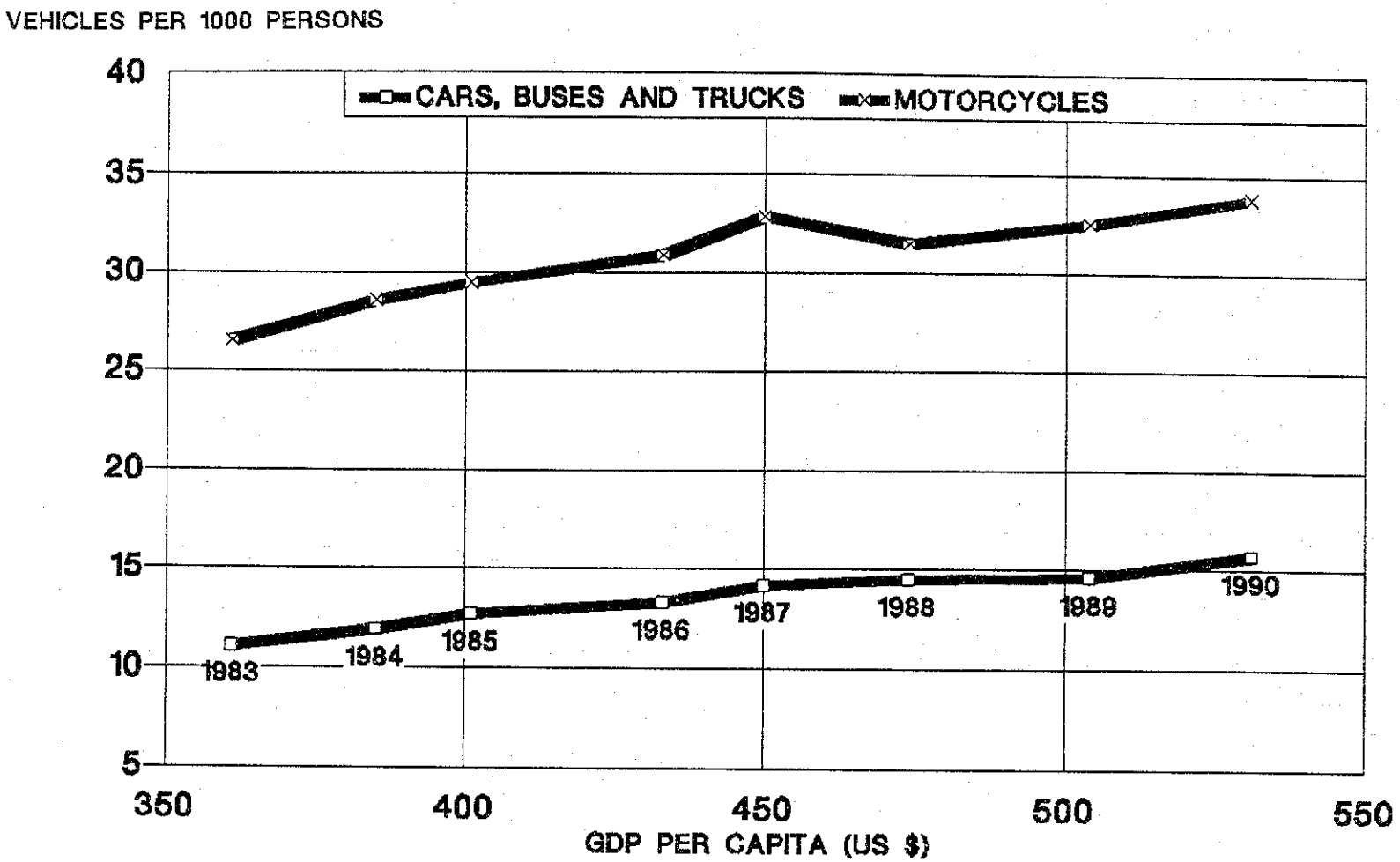
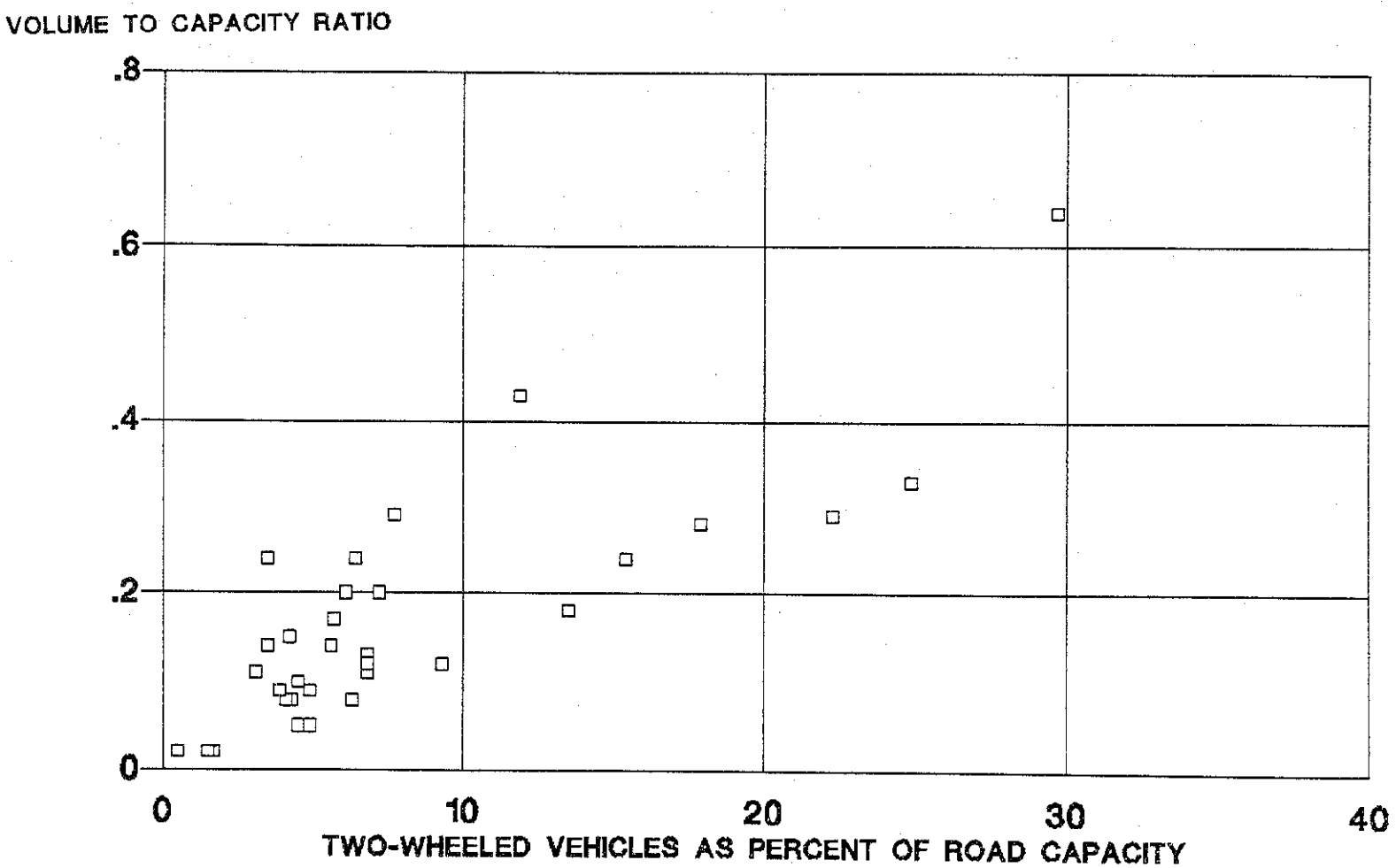
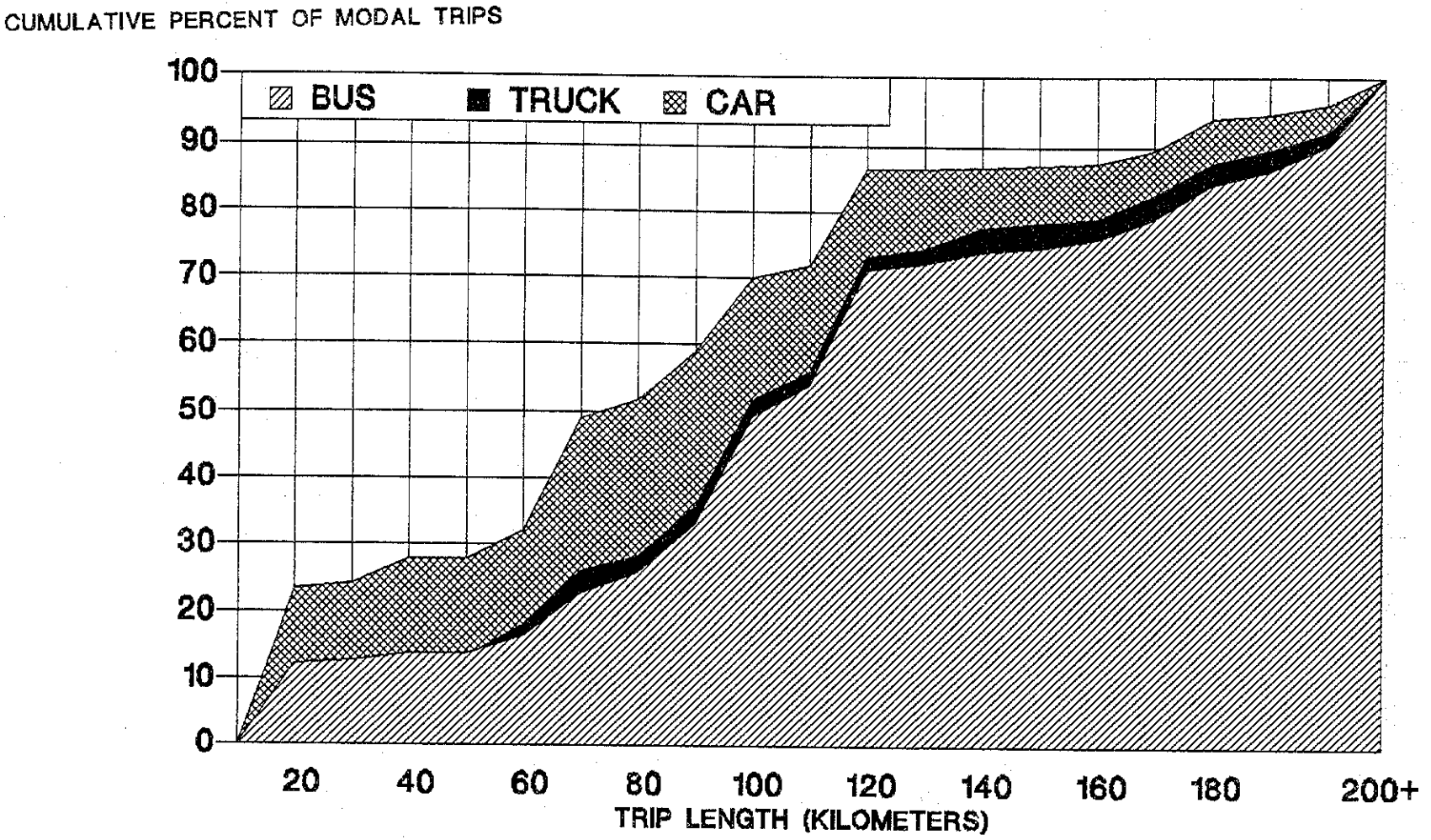


Figure A.14 Recent Vehicle Ownership Pattern - Indonesia



(1) Data reflect 1993 Interzonal demand patterns.

Figure A.15 Relative Capacity Impact of Two-Wheeled Vehicles Northern Vietnam Roadway Network



(1) Derived from assignment of 1993 trip matrixes onto 1993 highway network

Figure A.16 Trip Length Distribution 1993 Study Area Vehicle Trips

Table A.6 Existing and Forecast Population and Income Northern Vietnam and Nation

ZONE		POPULATION (000)									INCOME (1)					
		1993			2000			2010			1993		2000		2010	
Number	Name	Urban	Rural	Total	Urban	Rural	Total	Urban	Rural	Total	GPP	GPP/Cap	GPP	GPP/Cap	GPP	GPP/Cap
1	Tuyen Quang	67	558	625	95	628	723	155	669	624	64	102	102	141	247	300
2	Cao Bang	64	560	624	90	632	722	146	674	820	63	101	100	139	239	291
3	Lang Son	90	578	668	127	646	773	206	683	889	75	112	122	158	306	344
4	Lai Chau	66	424	490	93	474	567	151	501	652	55	112	89	157	224	344
5	Yen Bai	124	513	637	174	562	736	284	582	866	87	137	142	193	379	438
6	Bac Thai	228	925	1153	321	1012	1333	523	1048	1571	159	138	260	195	695	442
7	Son La	107	655	762	150	730	880	244	771	1015	87	114	141	160	357	352
8	Quang Ninh	454	442	896	638	397	1035	1040	317	1357	231	258	393	380	1176	867
9	Vinh Phu	274	1938	2212	386	2171	2557	793	2174	2967	240	108	386	151	1122	378
10	Ha Bac	121	2148	2269	171	2453	2624	692	2524	3216	184	81	286	109	1052	327
11	Ha Noi	1173	989	2162	1650	849	2499	2501	627	3128	833	385	1536	615	5294	1692
12	Hai Phong	558	1022	1580	785	1042	1827	1613	733	2346	454	287	824	451	3508	1495
13	Hoa Binh	114	598	712	160	663	823	261	695	956	87	122	142	173	367	384
14	Hai Hung	141	2531	2672	199	2891	3090	683	2891	3574	352	132	595	193	2209	618
15	Thai Binh	109	1677	1786	154	1911	2065	250	2061	2311	243	136	412	200	1090	472
16	Ninh Binh	75	764	839	105	864	969	171	925	1096	126	150	217	224	610	557
17	Ha Giang	48	466	514	68	526	594	111	563	674	50	97	79	133	187	277
18	Lao Cai	65	454	519	92	508	600	150	539	689	57	110	91	152	227	329
19	Ha Dong	148	2076	2224	208	2363	2571	541	2475	3016	309	139	525	204	1801	597
20	Nam Ha	317	2278	2595	445	2554	2999	725	2711	3436	435	168	756	252	2245	653
TOTAL STUDY AREA		4343	21596	25939	6111	23876	29987	11240	24163	35403	4191	162	7198	240	23335	659
REST OF NATION				43661			50513			59597	12513	287	19624	388	46235	776
TOTAL VIETNAM				69600			80500			95000	16704	240	26822	333	69570	732

Source: JICA Team.

(1) GPP represents a zonal allocation of national GDP. Units of GPP are million constant 1993 US $; GPP/Capita constant 1993 US $. Indicated income represents the "likely" scenario utilized in simulation processes. Full detail are contained in reports authored by sectorial specialists.

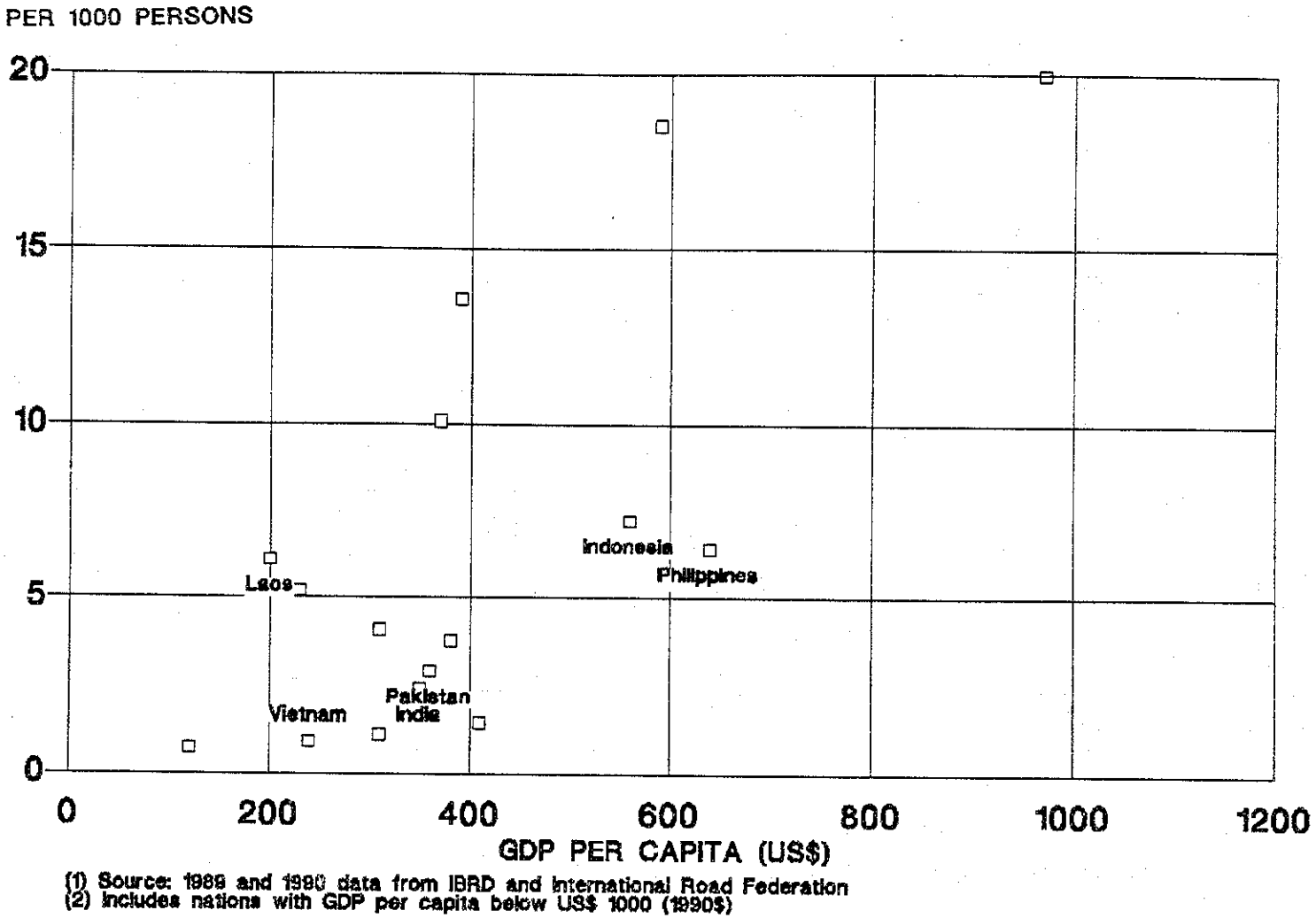
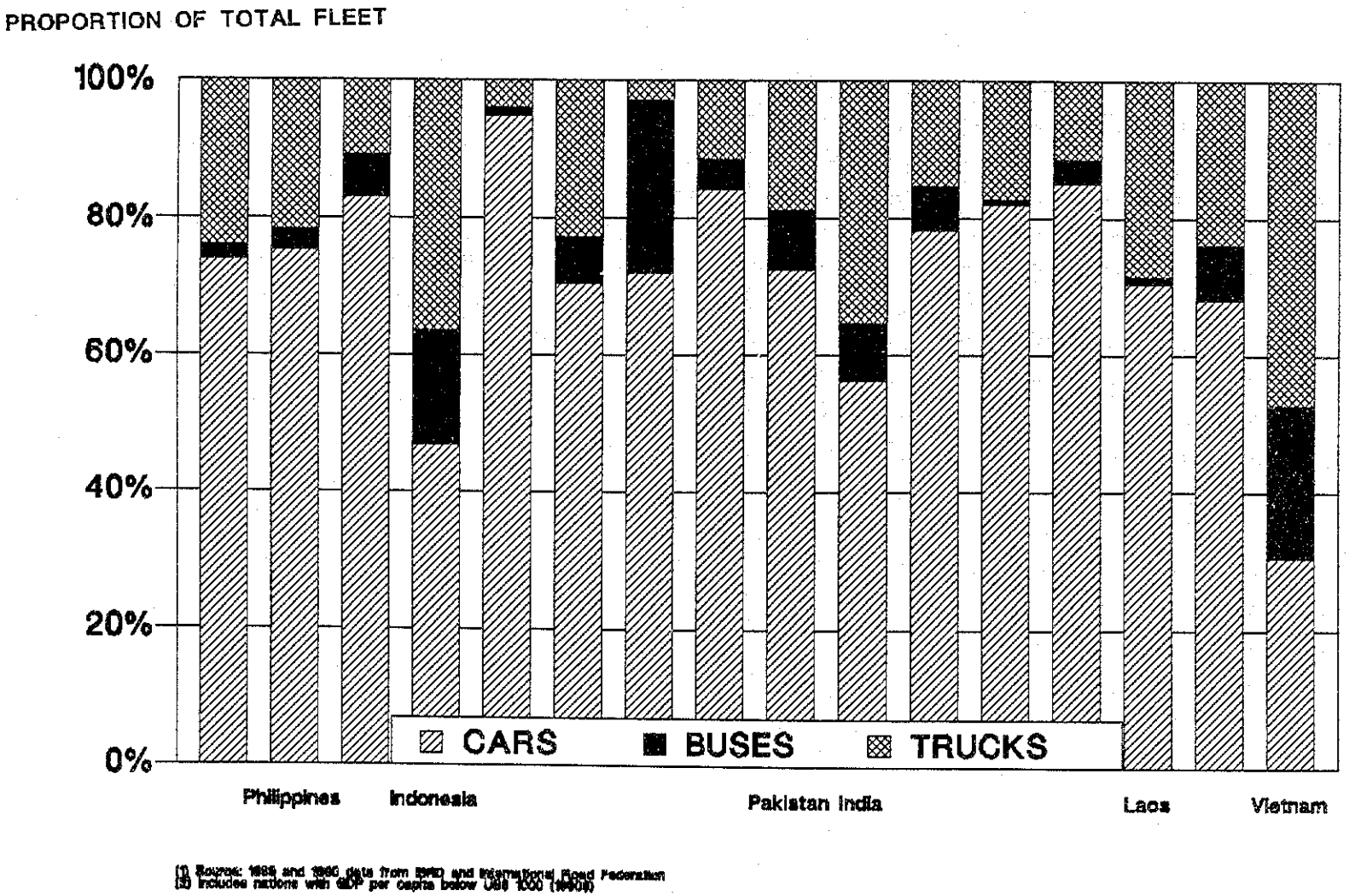


Figure A.17 Car Ownership Pattern - Low Income Nations



[1] Source: 1985 and 1990 data from ESRD and International Road Federation
[2] Includes nations with GDP per capita below US$ 1000 (1980$)

Figure A.18 Vehicle Fleet Composition - Low Income Nations

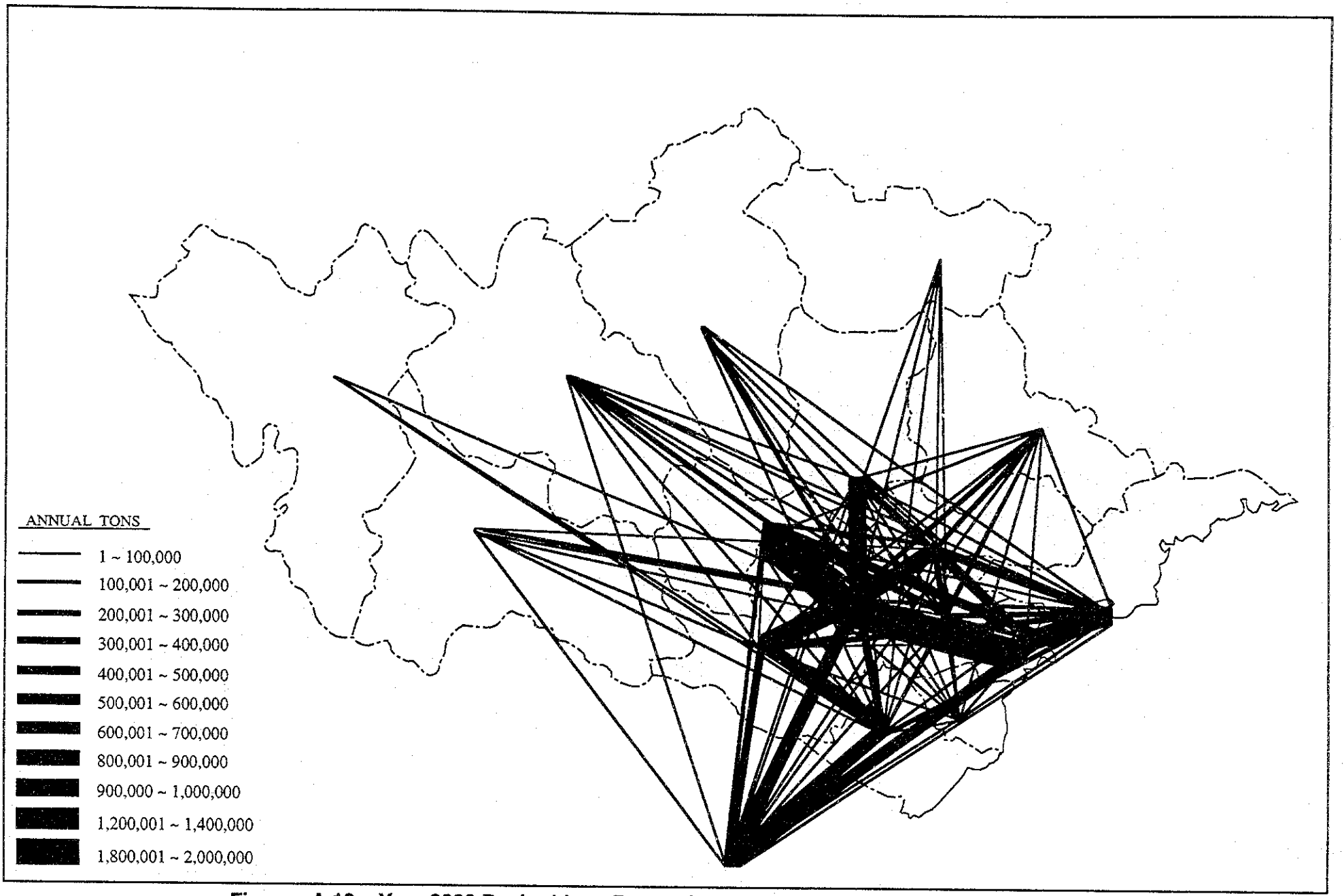


Figure A.19 Year 2000 Desire Lines Domestic Interzonal Road Cargo Flow Northern Vietnam

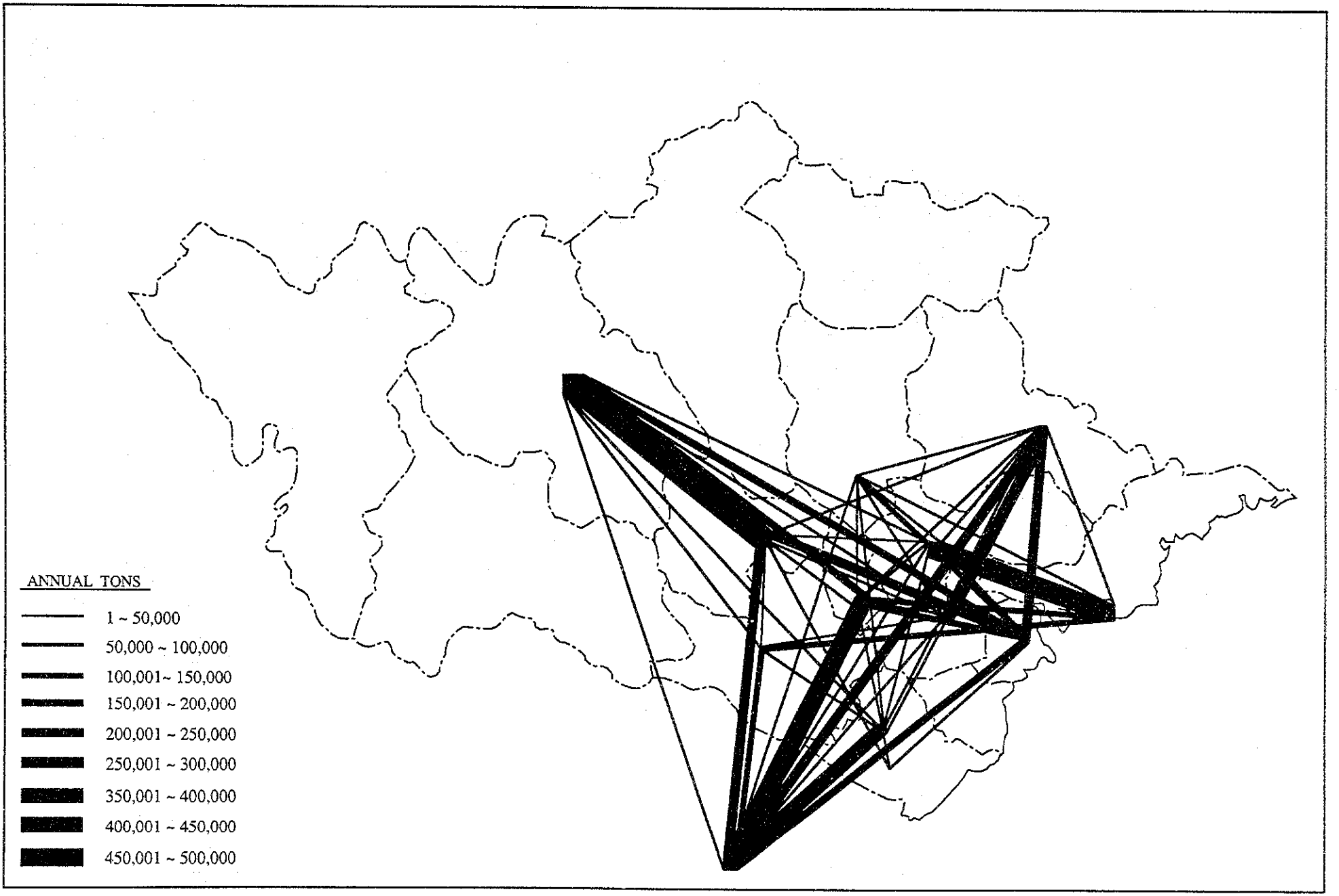


Figure A.20 Year 2000 Desire Lines Domestic Interzonal Rail Cargo Flow Northern Vietnam

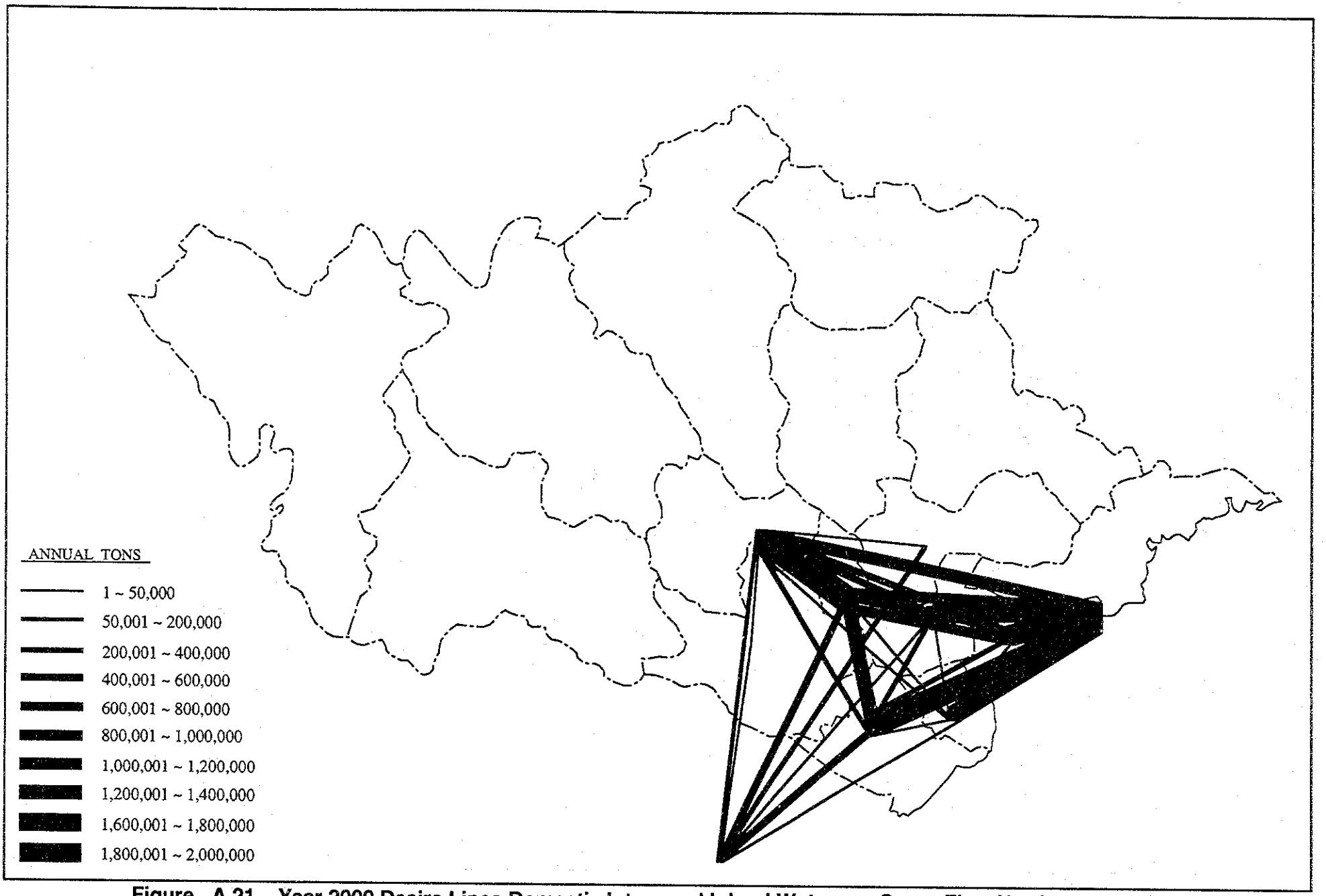


Figure A.21 Year 2000 Desire Lines Domestic Interzonal Inland Waterway Cargo Flow Northern Vietnam

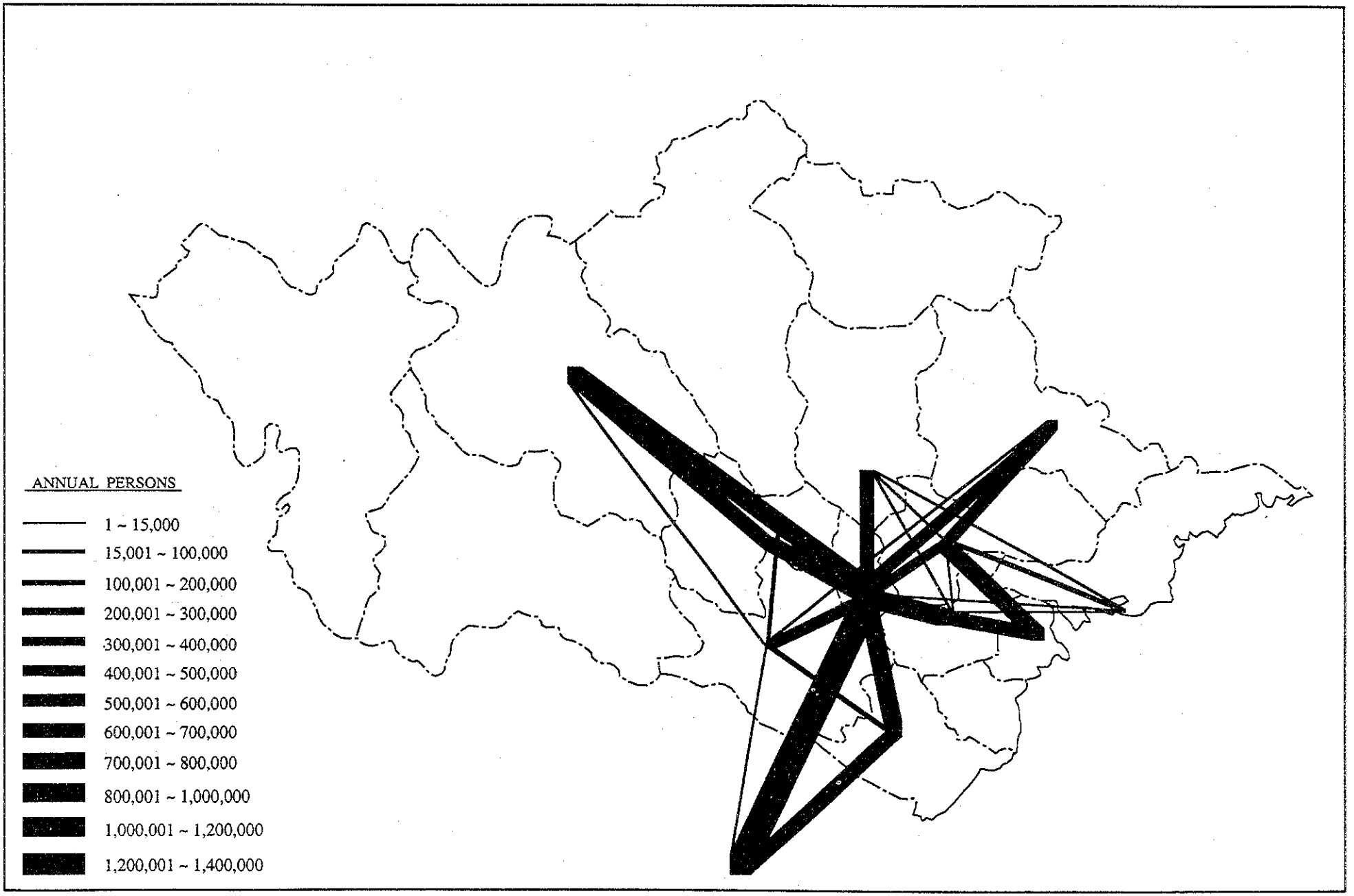


Figure A.22 Year 2000 Desire Lines Domestic Interzonal Car Passenger Flow Northern Vietnam

Table A.7 Official External Trade, 1985 - 1990: Exports Western Southeast Asian Subregion

SENDING SUBREGIONAL COUNTRY	YEAR	TOTAL EXPORTS (MILL US $)	RECEIVING ENTITY (PERCENT OF TOTAL ANNUAL NATIONAL EXPORTS)									
			SUBREGIONAL COUNTRY							Rest of ASEAN	Rest of World	Grand Total
			PR China	Lao PDR	Vietnam	Cambodia	Myanmar	Thailand	Subtotal			
PR China	1985	27329		*	*	0.00	0.13	0.43	0.56	9.84	89.60	100.00
	1986	31367		*	*	0.00	0.12	0.51	0.63	5.49	93.88	100.00
	1987	39464		0.00	*	0.00	0.17	0.76	0.93	5.10	93.97	100.00
	1988	47662		0.01	*	0.00	0.28	1.07	1.36	4.85	93.79	100.00
	1989	52914		0.01	0.00	0.00	0.36	0.94	1.31	4.74	93.95	100.00
	1990	64011		0.02	0.01	0.00	0.43	1.29	1.75	4.55	93.70	100.00
Lao PDR	1985	17	52.17		*	*	*	6.48	58.65	9.56	31.79	100.00
	1986	14	62.45		*	*	*	8.24	70.69	0.84	28.47	100.00
	1987	88	10.99		*	*	*	6.16	17.15	0.01	82.84	100.00
	1988	97	16.57		*	*	*	20.98	37.55	1.34	61.11	100.00
	1989	195	5.85		*	*	*	20.31	26.16	0.15	73.69	100.00
	1990	222	2.55		*	*	*	18.16	20.71	0.08	79.21	100.00
Vietnam	1985	342	0.00	0.03		*	*	0.16	0.19	21.80	78.01	100.00
	1986	341	0.00	0.02		*	*	0.46	0.48	5.65	93.87	100.00
	1987	424	0.00	0.02		*	*	0.63	0.65	4.30	95.05	100.00
	1988	531	0.00	0.02		*	*	1.57	1.59	5.74	92.67	100.00
	1989	969	0.00	0.01		*	*	4.28	4.29	7.77	87.94	100.00
	1990	1289	0.24	0.01		*	*	6.62	6.87	14.22	78.91	100.00
Cambodia	1985	5	11.39	*	*		*	*	11.39	28.78	59.83	100.00
	1986	3	0.00	*	*		*	*	0.00	2.80	97.20	100.00
	1987	10	0.00	*	*		*	*	0.00	5.49	94.51	100.00
	1988	8	2.14	*	*		*	0.24	2.38	36.79	60.83	100.00
	1989	17	5.55	*	*		*	13.38	18.93	42.68	38.39	100.00
	1990	38	0.45	*	*		*	22.80	23.25	41.50	35.25	100.00
Myanmar	1985	303	1.23	*	0.44	*		0.79	2.46	18.92	78.62	100.00
	1986	288	1.22	*	0.44	*		0.79	2.45	18.92	78.63	100.00
	1987	219	1.23	*	0.44	*		0.79	2.46	18.92	78.62	100.00
	1988	147	1.23	*	0.44	*		0.79	2.46	18.93	78.61	100.00
	1989	215	1.23	*	0.44	*		0.79	2.46	18.92	78.62	100.00
	1990	410	6.38	*	0.29	*		9.53	16.20	16.06	67.74	100.00
Thailand	1985	7123	3.80	0.28	0.00	0.00	0.15		4.23	14.47	81.30	100.00
	1986	8864	3.11	0.34	0.01	*	0.16		3.62	14.32	82.06	100.00
	1987	11564	3.35	0.32	0.04	*	0.13		3.84	13.69	82.47	100.00
	1988	15910	2.98	0.32	0.03	0.00	0.09		3.42	11.71	84.87	100.00
	1989	20175	2.68	0.32	0.08	0.00	0.12		3.20	11.42	85.38	100.00
	1990	23181	1.36	0.28	0.08	0.00	0.18		1.90	11.32	86.78	100.00

Source: Asian Development Bank. (*) indicates data not available.

Table A.8 Official External Trade, 1985 - 1990: Imports Western Southeast Asian Subregion

RECEIVING SUBREGIONAL COUNTRY	YEAR	TOTAL IMPORTS (MILL US$)	SENDING ENTITY (PERCENT OF TOTAL ANNUAL NATIONAL IMPORTS) SUBREGIONAL COUNTRY							Rest of ASEAN	Rest of World	Grand Total
			PR China	Lao PDR	Vietnam	Cambodia	Myanmar	Thailand	Subtotal			
PR China	1985	42480		0.02	0.00	0.00	0.11	0.62	0.75	2.04	97.21	100.00
	1986	43247		0.02	0.00	0.00	0.13	0.66	0.81	2.76	96.43	100.00
	1987	43222		0.02	0.00	0.00	0.22	0.94	1.18	3.82	95.00	100.00
	1988	55352		0.03	0.00	0.00	0.25	1.14	1.42	4.35	94.23	100.00
	1989	59140		0.02	0.01	0.00	0.21	1.28	1.52	4.84	93.64	100.00
	1990	53225		0.01	0.01	0.00	0.20	0.70	0.92	4.86	94.22	100.00
Lao PDR	1985	54	0.00		0.18	*	*	40.24	40.42	20.28	39.30	100.00
	1986	29	0.00		0.32	*	*	48.57	48.89	1.22	49.89	100.00
	1987	89	0.75		0.13	*	*	46.19	47.07	2.77	50.16	100.00
	1988	114	2.89		0.12	*	*	49.35	52.36	1.13	46.51	100.00
	1989	147	3.32		0.11	*	*	47.91	51.34	0.06	48.60	100.00
	1990	154	7.12		0.12	*	*	46.94	54.18	0.37	45.45	100.00
Vietnam	1985	610	0.00	*		*	0.25	0.06	0.31	24.48	75.21	100.00
	1986	590	0.00	*		*	0.24	0.21	0.45	6.19	93.36	100.00
	1987	615	0.00	*		*	0.18	0.77	0.95	5.30	93.75	100.00
	1988	788	0.00	*		*	0.09	0.65	0.74	5.29	93.97	100.00
	1989	841	0.00	*		*	0.12	2.11	2.23	7.19	90.58	100.00
	1990	1018	0.42	*		*	0.13	1.97	2.52	4.60	92.88	100.00
Cambodia	1985	27	2.01	*	*		*	1.39	3.40	61.23	35.37	100.00
	1986	11	1.00	*	*		*	0.00	1.00	11.17	87.83	100.00
	1987	13	1.65	*	*		*	0.00	1.65	2.48	95.87	100.00
	1988	24	1.84	*	*		*	2.76	4.60	13.76	81.64	100.00
	1989	40	3.61	*	*		*	0.23	3.84	38.99	57.17	100.00
	1990	48	7.04	*	*		*	1.92	8.96	27.79	63.25	100.00
Myanmar	1985	283	3.16	*	*	0.00		0.54	3.70	8.49	87.81	100.00
	1986	304	3.16	*	*	0.00		0.55	3.71	8.50	87.79	100.00
	1987	268	3.16	*	*	0.00		0.55	3.71	8.50	87.79	100.00
	1988	244	3.16	*	*	0.00		0.55	3.71	8.47	87.82	100.00
	1989	194	3.16	*	*	0.00		0.55	3.71	8.47	87.82	100.00
	1990	608	16.86	*	*	0.00		2.58	19.44	25.34	55.22	100.00
Thailand	1985	9260	2.41	0.01	0.01	0.00	0.41		2.84	18.22	78.94	100.00
	1986	9165	2.87	0.01	0.02	0.00	0.36		3.26	14.15	82.59	100.00
	1987	12998	3.88	0.05	0.02	0.00	0.28		4.23	15.61	80.16	100.00
	1988	20298	3.35	0.11	0.05	0.00	0.30		3.81	12.15	84.04	100.00
	1989	25373	2.93	0.17	0.18	0.01	0.31		3.60	12.08	84.32	100.00
	1990	33392	3.32	0.13	0.28	0.03	0.37		4.13	12.25	83.62	100.00

Source: Asian Development Bank. (*) indicates data not available.

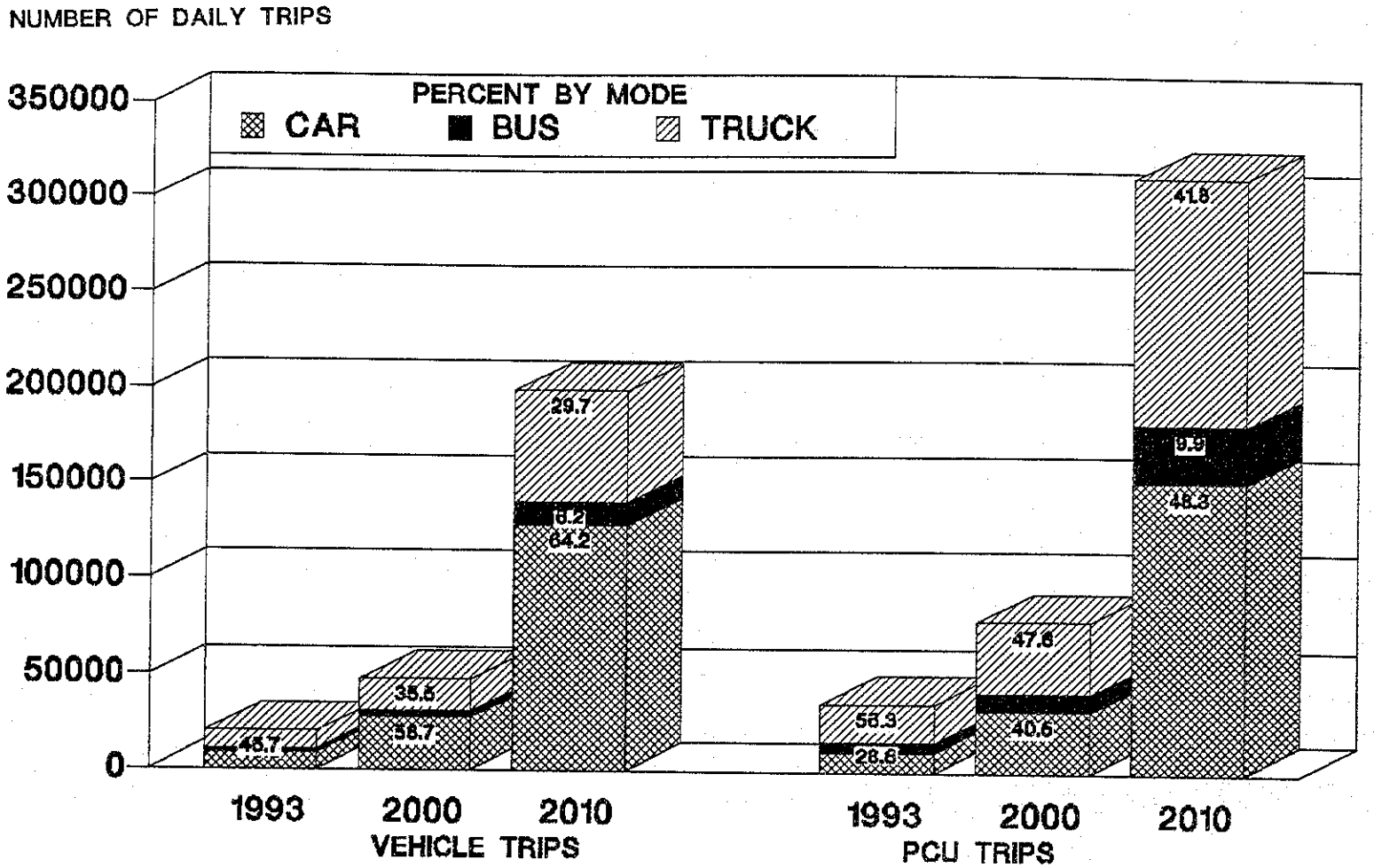


Figure A.23 Existing and Forecast Trip Activity Northern Vietnam Study Area

Figure A.24 Year 2000 Desire Lines Interzonal Vehicle TripsNorthern Vietnam