

## **6. ACCIDENT AND SAFETY ANALYSIS**

### **6.1 Introduction**

An accident and safety analysis is an important component of traffic and transportation planning studies as accident frequency and patterns can shed light on locations needing special attention and possibly safety improvement measures. In order to identify the locations where traffic accidents are prevalent and where safety issues may exist in the study area, it was necessary to gather and analyze a set of accident data that would establish patterns. Consequently all the existing accident data for the period 1996 to 2000 was assembled and analyzed. These records were collected using the New York City Department of Transportation (NYCDOT) accident database which includes New York State Department of Motor Vehicle (NYS DMV) and New York Police Department (NYPD) reported accidents. This data was used to identify critical locations with high accident frequency, to determine the severity, type, and cause of the accidents as well as other pertinent factors.

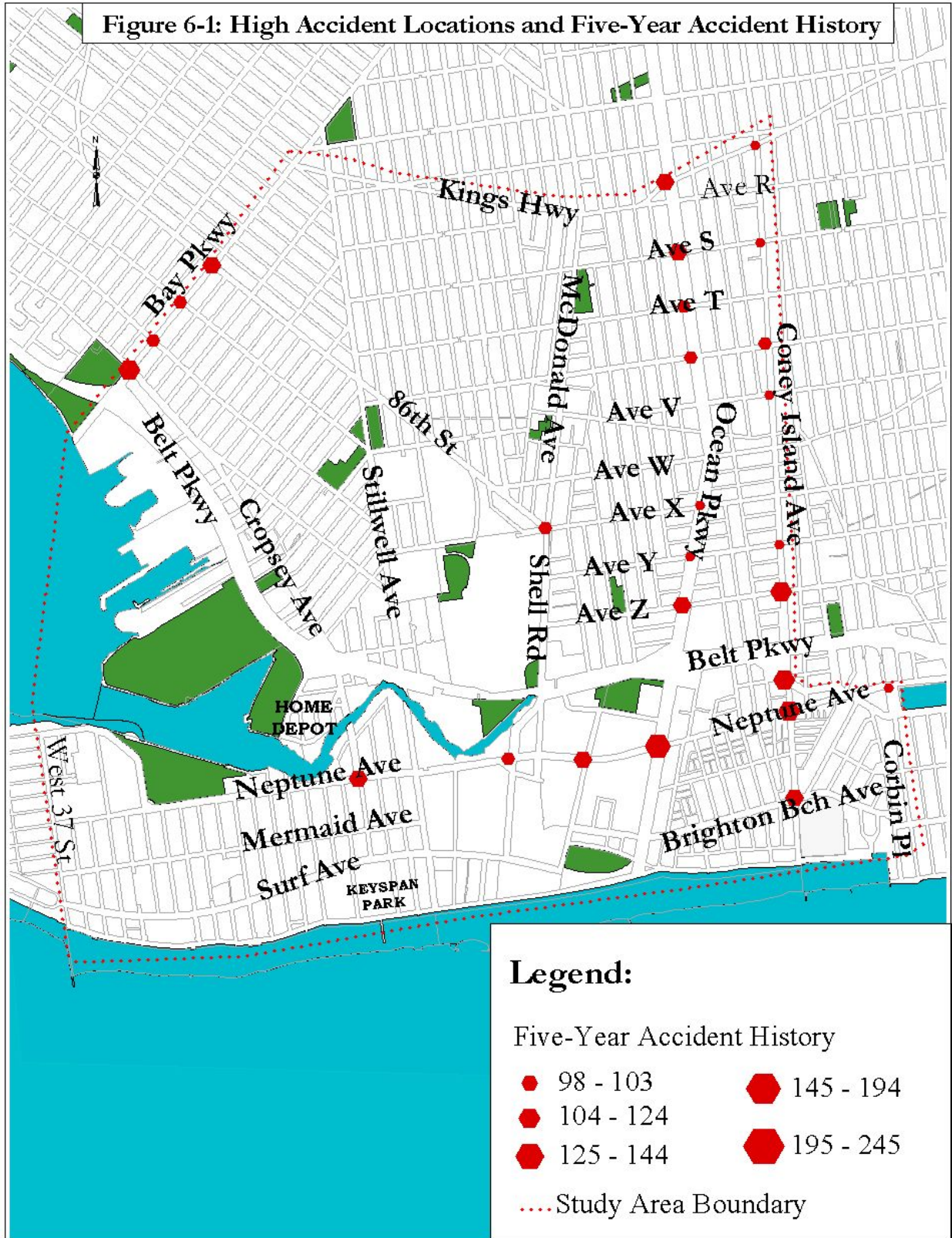
The traffic accident analysis showed that some intersections in the study area ranked among the top 75 accident-prone locations in Brooklyn. As a result, the detailed traffic accident analysis concentrated only on those locations where the average annual reportable accident for the analysis period was greater than 20. There were 26 locations, located primarily along the main corridors that met this criterion. Table 6-1 shows the 26 intersections studied and a summary of their accident history from 1996 to 2000; the location of these intersections is also shown in Figure 6-1.

Analysis of the accidents by corridors showed that each year Coney Island Avenue had the highest number of accidents. The data also showed that the Neptune Avenue/Ocean Parkway intersection was the most critical location with an average of 49 accidents per year for the five years analyzed. The second most critical intersection was Coney Island Avenue/Avenue Z with an average of 39 accidents per year. The data showed that there was one location with an average between 41 to 50 accidents per year, four locations with between 31 to 40 accidents, and twenty-one locations that averaged between 20 to 30 accidents per year.

**Table 6-1: Study Area Accident History (1996-2000)**

No	Node#	Main Street	Cross Street	1996	1997	1998	1999	2000	Total	Average
1	7059/7064/7069	Neptune Avenue	Ocean Parkway	51	38	45	59	52	245	49
2	8200	Avenue Z	Coney Island Avenue	32	48	37	46	31	194	39
3	6907	Coney Island Avenue	Guider Avenue (Ramp to Belt Pkwy)	41	39	43	29	24	176	35
4	8044	Coney Island Avenue	Emmons Avenue	27	33	27	38	47	172	34
5	6839	Cropsey Avenue	Bay Parkway	25	28	39	32	34	158	32
6	7073/7099/7120	Ocean Parkway	Avenue Z	30	30	22	31	31	144	29
7	7440	86th Street	Bay Parkway	23	26	31	27	34	141	28
8	8032	Neptune Avenue	West 5th Street	21	25	32	35	27	140	28
9	7088/7136/7109	Ocean Parkway	Kings Highway	23	26	33	35	19	136	27
10	7931	Neptune Avenue	West 17th Street	32	17	31	27	27	134	27
11	8074	Brighton Beach Avenue	Coney Island Avenue	24	24	25	32	28	133	27
12	7086/7107/7134	Avenue S	Ocean Parkway	28	18	28	35	23	132	26
13	8255	Avenue U	Coney Island Avenue	29	17	24	30	24	124	25
14	7085/7106/7133	Avenue T	Ocean Parkway	14	22	24	31	32	123	25
15	7442	Bath Avenue	Bay Parkway	24	19	28	27	21	119	24
16	7927	Neptune Avenue	West 8th Street	30	24	19	24	21	118	24
17	7770	86th Street	Avenue X	16	19	24	30	22	111	22
18	7084/7105/7132	Avenue U	Ocean Parkway	19	15	25	23	28	110	22
19	7441	Bay Parkway	Benson Avenue	16	19	31	18	25	109	22
20	7021	Shore Boulevard	Emmons Avenue	20	21	22	19	21	103	21
21	8376	King Highway	Coney Island Avenue	13	26	20	22	21	102	20
22	7101/7126/7079	Ocean Parkway	Avenue X	24	20	19	21	18	102	20
23	8241	Avenue S	Coney Island Avenue	20	18	29	11	23	101	20
24	8269	Avenue V	Coney Island Avenue	23	17	18	20	21	99	20
25	8316	Avenue Y	Coney Island Avenue	17	18	24	15	24	98	20
26	7076/7100/7123	Avenue Y	Ocean Parkway	24	19	18	16	21	98	20
<b>TOTAL</b>				<b>646</b>	<b>626</b>	<b>718</b>	<b>733</b>	<b>699</b>	<b>3,422</b>	<b>684</b>

Figure 6-1: High Accident Locations and Five-Year Accident History



## 6.2 Cost Analysis of Accidents

There is a cost associated with all accidents – reportable and non-reportable. For reportable accidents, a cost is assigned based on the severity of personal injury and the amount of property damage sustained in the accident. There are three classifications for personal injury – Type A, Type B, and Type C; Type C being the least severe and Type A being the most severe form of injury.

The NYCDOT Safety Division developed a set of equations to assess a location’s relative accident experience in a quantitative measurement. These equations allow us to calculate the Severity and Frequency Factor of a location. In addition, the ratio of the Severity to Frequency Factor, the Composite Index, makes it possible for one to determine if the accidents at a location is skewed toward severity or frequency.

### *Severity Factor*

The severity factor (SF) was developed from accident cost research. It describes the cost associated with an accident based on its classification among the six different accidents classes utilized by New York State and shown in Table 6-2.

**Table 6-2: Average Cost of Accidents by Class**

Accidents Class	Average Cost	Relative Weight
Non-Reportable (NR)	\$1,000	1
Property Damage (PD)	\$3,800	4
Injury-Class C (IC)	\$96,000	96
Injury-Class B (IB)	\$385,000	385
Injury-Class A (IA)	\$1,548,000	1,548
Fatal Accidents (FA)	\$3,468,000	3,468

Non-Reportable accidents are defined as any accident that costs under \$1,000. These are the least severe and costly accidents with the average non-reportable accident in New York costing \$1,000. The average cost for property damage is \$3,800. It is important to point out that property

damage is considered only when public or private properties such as buildings, houses, business stores or other assets are damaged but does not include damage or injuries to the cars, pedestrians or bicyclists involved in the accident. An accident class (A, B, or C) is determined by the most severe physical injury irrespective of the number of injuries incurred. An accident is considered fatal when someone dies as a result of injuries sustained in the accident.

The relative weight scale is used to facilitate comparisons of the financial cost of each type of accident. For example, if an accident resulted in a Class C injury, its average cost would be 96 times that of a non-reportable accident. The use of the relative weight values allows us to determine the final severity factor and assign a value between 0 and 10. Various levels of severity can be determined from the relative weight assigned to each accident class.

In the mathematical expression for the calculation of the severity factor, the relative weight of each accident class is multiplied by the number of accidents and summed. Later the natural logarithm of the sum is taken. The equation used to calculate the severity factor is as follows:

$$\text{Ln}(1 * \text{NR} + 4 * \text{PD} + 96 * \text{IC} + 385 * \text{IB} + 1548 * \text{IA} + 3468 * \text{FA})$$

Table 6-3 illustrates the calculation of the severity factor for accidents that occurred at Bay Parkway/Benson Avenue in 1998.

**Table 6-3: Calculation of Severity Factor at Bay Parkway/Benson Avenue (1998)**

Accidents Class	Relative Weight	Frequency (1998)	Total Relative Weight
Non-Reportable (NR)	1	15	15
Property Damage (PD)	4	0	0
Injury-Class C (IC)	96	15	1,440
Injury-Class B (IB)	385	4	1,540
Injury-Class A (IA)	1,548	4	6,192
Fatal accidents (FA)	3,468	1	3,468
		Total	12,655
		<b>SF=Ln (Total)</b>	<b>9.45</b>

The severity factor of 9.45 indicates that this location tends to have accidents with significant levels of damage with the likelihood of accidents resulting in Class A injuries. The total cost for accidents occurring at this location in 1998 is shown below in Table 6-4.

**Table 6-4: Total Cost of Accidents at Bay Parkway/Benson Avenue (1998)**

<b>No. of Accidents</b>	<b>Accidents Class</b>	<b>Average Cost</b>	<b>Total Cost</b>
15	Non-Reportable	\$1,000	\$15,000
0	Property Damage	\$3,800	\$0
15	Injury-Class C	\$96,000	\$1,440,000
4	Injury-Class B	\$385,000	\$1,540,000
4	Injury-Class A	\$1,548,000	\$6,192,000
1	Fatal Accident	\$3,468,000	\$3,468,000
<b>Total Cost:</b>			\$12,655,000

The analysis shows that the total cost for the 39 accidents that occurred at this intersection in 1998 was approximately \$6.9 million with the highest cumulative cost resulting from four Class A injuries.

***Frequency Factor***

The frequency at which accidents occur at a location (frequency factor (FF)) is an additional tool to help understand accidents at a location. The frequency factor is based in part on the accident records supplied by NYSDMV and NYSDOT Centralized Local Accident Surveillance System (CLASS). The CLASS system evolved from a ten-year (1983-1992) study that identified the 10 locations with the highest number of accidents in the state, city, or geographical region. Locations with an average of 152 accidents were assigned a value of 10. For the final equation the frequency factor was also expressed as a natural logarithm and assigned a value between 0 and 10. The mathematical equation used is:

$$2 * \ln(\text{number of accidents}) \text{ or } \ln(\text{number of accidents})^2$$

Following the example used above, the frequency factor at the Bay Parkway/Benson Avenue intersection in 1998 is calculated as follows:

$$FF = 2 * \ln(\text{number of accidents}) = 2 * \ln(31) = 6.87 \text{ or}$$

$$FF = \ln(\text{number of accidents})^2 = \ln(31)^2 = 6.87$$

**Composite Index**

The composite index (CI) indicates the ratio of the severity factor to the frequency factor. This index represents the distribution characteristics of a location’s accidents with respect to the expected norm - 1.0. If this index is greater than 1.0, the location’s accidents is skewed toward severity; if the index is less than 1.0, then it is skewed toward frequency.

Using the example of the Bay Parkway/Benson Avenue intersection, the Composite Index for year 1998 was:

$$CI = SF / FF = 9.21 / 6.87 = 1.34$$

With a severity factor greater than 7.0, a frequency factor greater than 6.0, and a composite index greater than 1.0, accidents with a fatality or Type A injuries are likely to happen at this location.

Table 6-5 shows a summary of sample severity factors, frequency factors, and composite index values that correspond to the type of injury and damage that is sustained in an accident.

**Table 6-5: The Meaning of Critical Factors in Accidents**

Severity Factor 7-10	Frequency Factor 7-10	Composite Index >1.0
This scenario indicates the likelihood of fatal accidents or Type A injuries, or random accidents.		
Severity Factor 7-10	Frequency Factor 7-10	Composite Index <1.0
This scenario indicates Type A and B injuries, no fatalities, but significant damages.		
Severity Factor 7-10	Frequency Factor 7-10	Composite Index =1.0
This scenario illustrates fatal accidents or Type A or B injuries, there is both frequency and severity.		
Severity Factor 4-7	Frequency Factor 4-7	Composite Index <1.0
This scenario illustrates Type C injuries and non-reportable accidents.		
Severity Factor 4-7	Frequency Factor 4-7	Composite Index >1.0
This scenario illustrates Type C injuries and non-reportable accidents.		

## 6.3 Annual Accident Analysis

### A. 1996

In 1996, the 26 intersections being analyzed experienced a total of 646 accidents, from which 331 (51%) were reportable. Figure 6-2 shows the distribution of accidents in the study area and Table 6-6 provides a detailed summary of these accidents. There were no fatalities; however there were 24 class A, 40 class B and 233 class C injuries. The intersection of Neptune Avenue/Ocean Parkway had the highest number of accidents (51), which resulted in 42 injuries, 5 of which were class A. The second highest location was Coney Island Avenue/Guider Avenue (Ramp to Belt Parkway) that had 41 accidents, including 29 injuries. The next two locations were Neptune Avenue/West 17<sup>th</sup> Street/Cropsey Avenue and Coney Island Avenue/Avenue Z, both of which had 32 accidents.

#### Accidents Involving Pedestrians and Bicyclists

In 1996 there were 37 accidents involving pedestrians at various locations in the study area. Six of these accidents occurred at the intersection of Neptune Avenue/Ocean Parkway. The critical locations for pedestrian accidents are those having three or more accidents involving pedestrians. There were 23 accidents involving bicyclists in the study area. The only critical location for accidents involving bicyclists was Ocean Parkway/Avenue U where there were four accidents involving bicyclists.

#### Accidents by Collision Type

The analysis of accidents that occurred in 1996 by the collision type showed that 30% were left turns, 40% were right angles, and 20% were rear ends. The three most critical locations for each of the three most prominent collision types were:

#### Left Turn:

1. Neptune Avenue/Ocean Parkway (9)
2. Coney Island Avenue/Guider Avenue (Ramp Belt Parkway) (7)
3. Emmons Avenue/Shore Boulevard (7)



Figure 6-2: 1996 Accident History



**Table 6-6: Summary of Traffic Accidents (1996)**

No	Node #	Main St	Cross St	Total Acc	RPT	Non-RPT	Fatal	Injury	ACCIDENT TYPE												
									Peds	Bikes	Fixed Obj.	Wet Road	Night	Left Turn	Rear End	Over-Taking	Right Angle	Right Turn	Head On	Side-Swipe	Other
1	7059/ 7064/ 7069	Neptune Ave	Ocean Pkwy	51	25	26	0	42	6	2	0	5	8	9	4	0	1	1	0	0	2
2	6907	Coney Island Ave	Guider Ave (Ramp to Belt Pkwy)	41	21	20	0	29	1	1	0	7	4	7	6	3	1	1	0	0	1
3	7931	Neptune Ave	W 17th St	32	16	16	0	26	0	1	3	4	8	3	1	2	1	1	1	0	3
4	8200	Avenue Z	Coney Island Ave	32	15	17	0	19	3	0	0	3	3	4	5	0	1		0	2	0
5	7927	Neptune Av	W 8th St	30	11	19	0	24	0	0	0	3	3	6	1	2	0	0	0	0	2
6	7073/ 7099/ 7120	Ocean Pkwy	Avenue Z	30	14	16	0	19	1	1	0	2	3	3	3	1	3	0	1	1	0
7	8255	Avenue U	Coney Island Ave	29	9	20	0	14	3	0	0	2	4	2	2	2	0	0	0	1	0
8	7086/ 7107/ 7134	Avenue S	Ocean Pkwy	28	19	9	0	26	0	2	1	2	7	3	4	2	5	0	0	0	2
9	8044	Coney Island Ave	Neptune Ave	27	16	11	0	20	4	0	0	7	5	5	1	0	3	1	0	1	1
10	6839	Cropsey Ave	Bay Pkwy	25	12	13	0	24	2	1	0	0	5	2	1	1	4	0	0	0	1
11	7442	Bath Ave	Bay Pkwy	24	9	15	0	10	1	1	1	1	0	2	1	2	1	0	0	0	0
12	8074	Brighton Beach Ave	Coney Island Ave	24	11	13	0	17	2	1	0	2	3	4	1	2	0	1	0	0	0
13	7076/ 7100/ 7123	Avenue Y	Ocean Pkwy	24	14	10	0	22	0	1	0	2	5	2	2	3	4	0	0	0	2
14	7101/ 7126/ 7079	Ocean Pkwy	Avenue X	24	9	15	0	14	1	1	0	1	3	3	0	0	4	0	0	0	0
15	7440	86th St	Bay Pkwy	23	12	11	0	13	3	1	0	0	1	0	2	1	4	0	0	0	1
16	8269	Avenue V	Coney Island Ave	23	9	14	0	20	0	0	0	3	0	2	5	0	1	0	0	0	1
17	7088/ 7136/ 7109	Ocean Pkwy	Kings Hwy	23	14	9	0	24	0	1	0	1	5	6	2	0	3	2	0	0	0
18	8032	Neptune Ave	W 5th St	21	17	4	0	24	5	0	0	7	7	5	0	1	3	1	0	1	1
19	7021	Shore Blvd	Emmons Ave	20	13	7	0	19	1	0	0	3	4	7	2	1	1	0	0	0	1
20	8241	Avenue S	Coney Island Ave	20	10	10	0	11	0	0	0	1	4	1	4	2	2	0	0	0	1
21	7084/ 7105/ 7132	Avenue U	Ocean Pkwy	19	13	6	0	22	0	4	0	2	6	1	2	1	3	0	0	0	2
22	8316	Avenue Y	Coney Island Ave	17	8	9	0	7	0	1	0	3	4	1	3	1	1	0	0	0	1
23	7441	Bay Pkwy	Benson Ave	16	10	6	0	15	1	1	1	0	2	1	1	1	3	0	0	0	1
24	7770	86th St	Avenue X	16	10	6	0	11	1	1	0	2	2	2	2	1	1	0	0	0	2
25	7085/ 7106/ 7133	Avenue T	Ocean Pkwy	14	8	6	0	8	0	1	1	2	3	0	0	1	4	1	0	0	0
26	8376	King Hwy	Coney Island Ave	13	6	7	0	8	2	1	0	0	2	1	0	0	1	1	0	0	0
<b>TOTAL</b>				646	331	315	0	488	37	23	7	65	101	82	55	30	55	10	2	6	25

Right Angle:

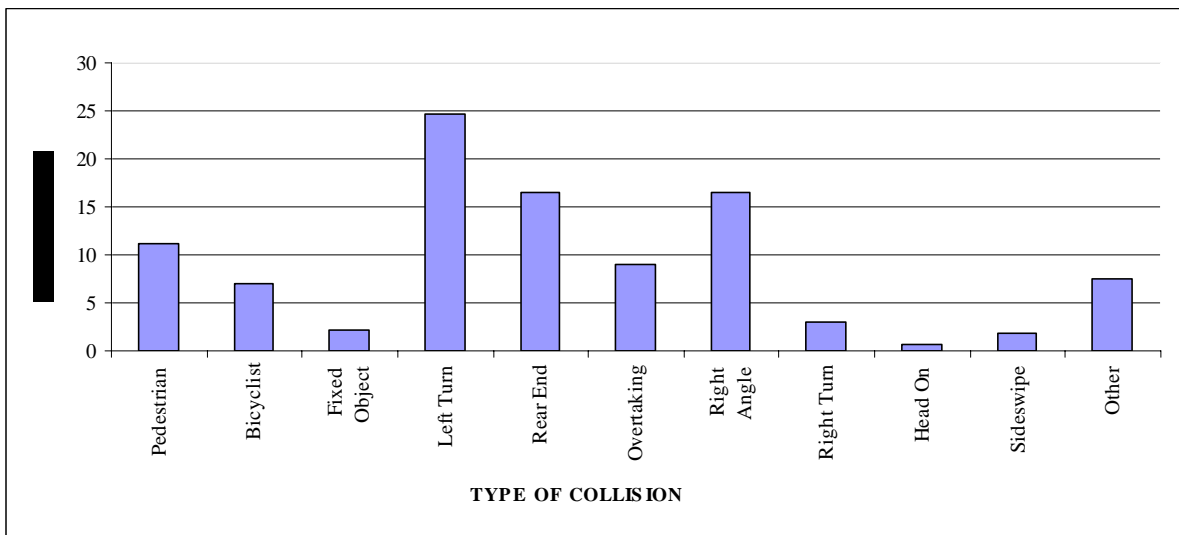
1. Ocean Parkway/Avenue S (5)
2. Ocean Parkway/Avenue X, Avenue Y, Avenue T (4)
3. Cropsey Avenue/Bay Parkway (4)
4. 86<sup>th</sup> Street/Bay Parkway (4)

Rear End:

1. Coney Island Avenue/Guider Avenue (Ramp Belt Parkway) (6)
2. Coney Island Avenue/Avenue V (5)
3. Coney Island Avenue/Avenue Z (5)

Chart 6-1 shows the distribution of reportable accidents in 1996 including those involving pedestrians and bicyclists.

**Chart 6-1: 1996 Accidents by Collision Type**



Accident Severity/Frequency Factors

During 1996, 17 intersections had a severity factor greater than 7.0, and 14 intersections had a frequency factor greater than 6.0. These intersections are shown in Table 6-7. The composite index for 25 of the 26 intersections being analyzed was greater than 1.0. This indicates that the majority of the accidents that occurred at these locations were skewed toward severity.

**Table 6-7: Traffic Accident Analysis (1996)**

No	Node #	Main St	Cross St	Fatal	Injury A	Injury B	Injury C	Property Damage	Non-Reportable	Total Accident	Severity Factor	Frequency Factor	Composite Index
1	7059/7064/7069	Neptune Ave	Ocean Pkwy	0	5	0	19	1	26	51	8.66	6.80	1.27
2	6907	Coney Island Ave	Guider Ave (Ramp to Belt Pkwy)	0	2	4	12	3	20	41	8.43	7.43	1.13
3	7770	86th St	Avenue X	0	3	1	5	1	6	16	8.37	5.55	1.51
4	7073/7099/7120	Ocean Pkwy	Avenue Z	0	3	0	10	1	16	30	8.05	6.09	1.32
5	7927	Neptune Av	W 8th St	0	2	0	8	1	19	30	8.03	6.80	1.18
6	6839	Cropsey Ave	Bay Pkwy	0	1	4	7	0	13	25	8.00	6.44	1.24
7	8044	Coney Island Ave	Neptune Ave	0	1	2	11	2	11	27	7.89	6.59	1.20
8	7088/7136/7109	Ocean Pkwy	Kings Hwy	0	1	4	8	1	9	23	7.86	5.78	1.36
9	7086/7107/7134	Avenue S	Ocean Pkwy	0	1	2	12	4	9	28	7.83	5.89	1.33
10	8074	Brighton Beach Ave	Coney Island Ave	0	1	2	8	0	13	24	7.80	6.36	1.23
11	8032	Neptune Ave	W 5th St	0	1	0	15	1	4	21	7.77	6.09	1.28
12	7931	Neptune Ave	W 17th St	0	0	5	9	2	16	32	7.71	6.93	1.11
13	8200	Avenue Z	Coney Island Ave	0	1	0	12	2	17	32	7.67	6.93	1.11
14	8241	Avenue S	Coney Island Ave	0	1	1	5	3	10	20	7.56	5.99	1.26
15	7085/7106/7133	Avenue T	Ocean Pkwy	0	1	1	5	1	6	14	7.38	4.97	1.48
16	8255	Avenue U	Coney Island Ave	0	0	3	5	1	20	29	7.18	6.73	1.07
17	7021	Shore Blvd	Emmons Ave	0	0	2	9	2	7	20	7.17	5.99	1.20
18	7076/7100/7123	Avenue Y	Ocean Pkwy	0	0	2	12	0	10	24	6.97	5.28	1.32
19	7440	86th St	Bay Pkwy	0	0	0	12	0	11	23	6.83	6.27	1.09
20	8269	Avenue V	Coney Island Ave	0	0	1	8	0	14	23	6.83	6.27	1.09
21	7441	Bay Pkwy	Benson Ave	0	0	1	8	1	6	16	6.83	5.55	1.23
22	8376	King Hwy	Coney Island Ave	0	0	2	4	0	7	13	6.82	3.13	2.18
23	7084/7105/7132	Avenue U	Ocean Pkwy	0	0	2	9	2	6	19	6.74	5.42	1.24
24	8316	Avenue Y	Coney Island Ave	0	0	1	5	2	9	17	6.55	5.67	1.16
25	7442	Bath Ave	Bay Pkwy	0	0	0	7	2	15	24	6.32	6.36	0.99
26	7101/7126/7079	Ocean Pkwy	Avenue X	0	0	0	8	1	15	24	6.30	5.67	1.11

## **B. 1997**

In 1997, there were 626 accidents at the 26 intersections analyzed. Fifty-five percent (339) of these accidents were reportable. There were no fatalities, 17 Class A injuries, 47 Class B injuries, and 248 Class C injuries. Figure 6-3 shows the distribution of accidents in the study area and Table 6-8 provides a detailed summary of these accidents.

The Coney Island Avenue/Avenue Z intersection had the highest number of accidents (48) with 30 being reportable. There was no fatality at this intersection; however it had the highest number of injuries (54). The Coney Island Avenue/Guider Avenue (Ramp to Belt Parkway) intersection had the second highest number of accidents in 1997 with 39; 50% of these accidents were reportable. The third ranked intersection was Neptune Avenue/Ocean Parkway with 38 accidents.

### Accidents Involving Pedestrians and Bicyclists

In 1997, there were 44 pedestrians and 13 bicyclists involved in accidents. The most critical locations were King Highway/Coney Island Avenue and 86<sup>th</sup> Street/Bay Parkway with five pedestrian accidents each.

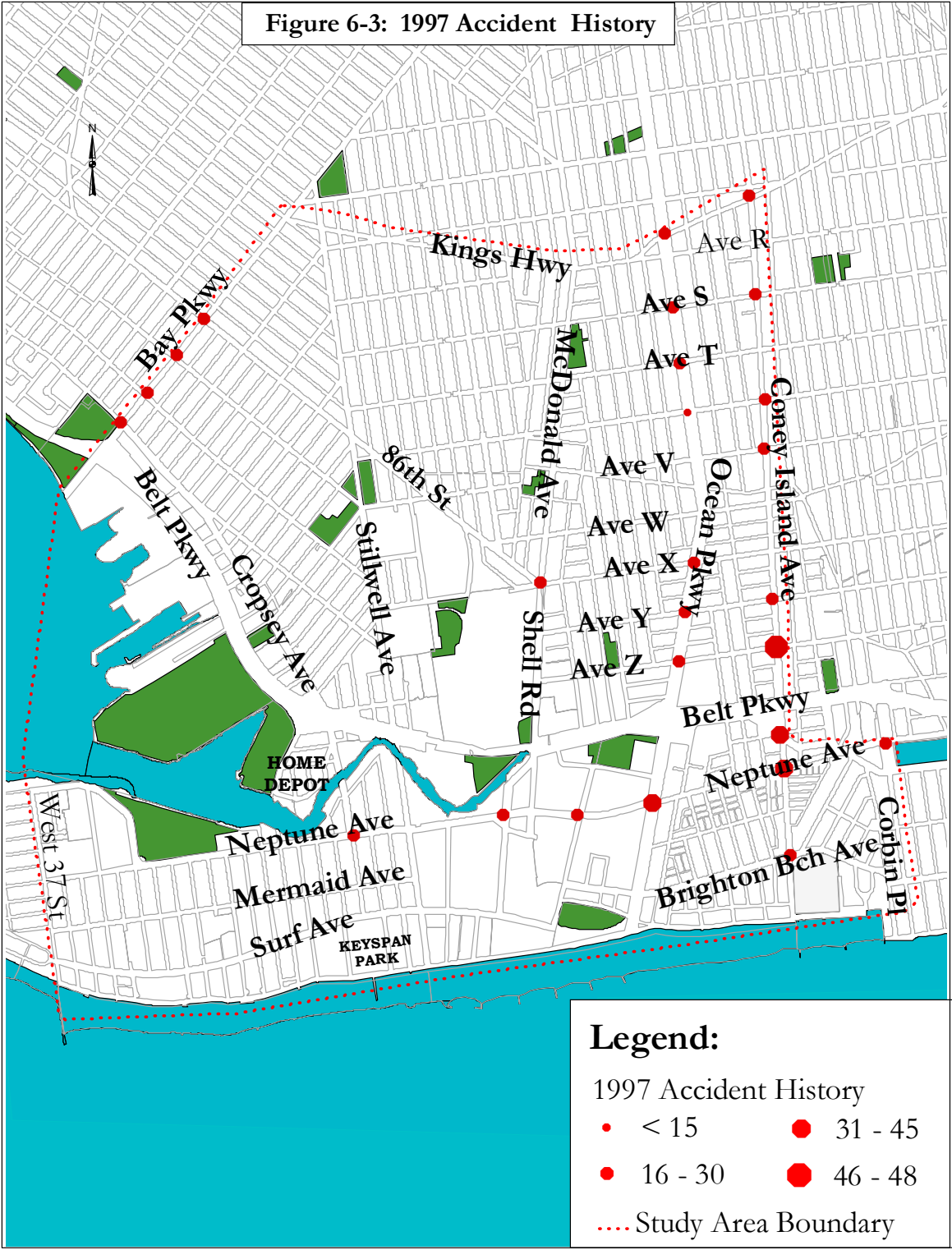
### Accidents by Collision Type

The collision data showed that 24% of the accidents at the intersections being analyzed were left turns, 23% were right angles, and 20% were rear end collisions. The most critical intersections for the three most prominent type of collision were:

#### Left Turn:

1. 86<sup>th</sup> Street/Avenue X (7)
2. Neptune Avenue/West 8<sup>th</sup> Street (6)
3. Coney Island Avenue/Guider Avenue (Ramp Belt Parkway) (6)
4. Coney Island Avenue/Avenue Z (6)

Figure 6-3: 1997 Accident History



**Table 6-8: Summary of Traffic Accidents (1997)**

No	Node #	Main St	Cross St	Total Acc	RPT	Non-RPT	Fatal	Injury	ACCIDENT TYPE												
									Peds	Bikes	Fixed Obj.	Wet Road	Night	Left Turn	Rear End	Over-Taking	Right Angle	Right Turn	Head On	Side-Swipe	Other
1	8200	Avenue Z	Coney Island Ave	48	30	18	0	54	3	1	0	10	9	6	7	2	4	0	0	2	5
2	6907	Coney Island Ave	Guider Ave (Ramp to Belt Pkwy)	39	19	20	0	26	0	0	1	7	7	6	4	1	5	0	0	0	2
3	7059/ 7064/ 7069	Neptune Ave	Ocean Pkwy	38	21	17	0	52	1	0	0	4	11	5	3	4	4	1	0	0	3
4	8044	Coney Island Ave	Neptune Ave	33	15	18	0	23	4	1	0	5	3	1	3	0	4	0	0	0	2
5	7073/ 7099/ 7120	Ocean Pkwy	Avenue Z	30	14	16	0	19	3	0	0	2	5	1	5	2	2	0	0	0	1
6	6839	Cropsey Ave	Bay Pkwy	28	14	14	0	20	1	2	0	0	1	4	2	0	3	0	0	0	2
7	7440	86th St	Bay Pkwy	26	12	14	0	15	5	0	0	1	5	0	2	1	2	1	0	0	1
8	8376	King Hwy	Coney Island Ave	26	11	15	0	21	5	0	0	3	7	1	2	2	0	0	0	0	1
9	7088/ 7136/ 7109	Ocean Pkwy	Kings Hwy	26	11	15	0	13	0	0	0	5	5	3	0	3	4	0	0	0	1
10	8032	Neptune Ave	W 5th St	25	11	14	0	19	3	0	0	4	1	3	0	0	2	2	0	1	0
11	7927	Neptune Av	W 8th St	24	13	11	0	25	2	0	0	5	2	6	0	2	2	0	0	0	1
12	8074	Brighton Beach Ave	Coney Island Ave	24	14	10	0	19	4	1	0	3	6	2	1	2	2	2	0	0	0
13	7085/ 7106/ 7133	Avenue T	Ocean Pkwy	22	14	8	0	22	0	2	0	1	2	2	6	1	3	0	0	0	0
14	7021	Shore Blvd	Emmons Ave	21	12	9	0	18	1	1	0	6	6	4	1	0	3	0	0	0	2
15	7101/ 7126/ 7079	Ocean Pkwy	Avenue X	20	11	9	0	21	1	2	0	2	4	1	1	0	3	0	0	0	3
16	7441	Bay Pkwy	Benson Ave	19	12	7	0	17	2	1	0	0	4	2	0	1	3	1	0	0	2
17	7442	Bath Ave	Bay Pkwy	19	10	9	0	15	2	0	0	2	6	3	0	1	3	0	0	0	1
18	7770	86th St	Avenue X	19	16	3	0	23	0	1	1	3	4	7	4	0	2	0	0	1	0
19	8241	Avenue S	Coney Island Ave	18	11	7	0	21	1	0	0	5	5	2	2	1	3	0	0	0	2
20	8316	Avenue Y	Coney Island Ave	18	11	7	0	20	2	0	0	3	5	2	3	3	0	0	0	0	1
21	7086/ 7107/ 7134	Avenue S	Ocean Pkwy	18	12	6	0	16	2	1	0	2	4	2	4	0	2	1	0	0	0
22	7931	Neptune Ave	W 17th St	17	12	5	0	14	0	0	3	4	5	1	0	1	1	1	2	1	2
23	8255	Avenue U	Coney Island Ave	17	10	7	0	28	0	0	0	3	6	1	2	0	3	0	0	1	3
24	8269	Avenue V	Coney Island Ave	17	6	11	0	8	1	0	0	2	1	0	2	1	0	1	0	1	0
25	7084/ 7105/ 7132	Avenue U	Ocean Pkwy	15	10	5	0	15	1	0	0	2	3	1	0	0	5	0	0	0	3
26	7076/ 7100/ 7123	Avenue Y	Ocean Pkwy	19	7	4	0	11	0	0	0	0	2	3	1	0	1	1	0	0	1
<b>TOTAL</b>				<b>626</b>	<b>339</b>	<b>279</b>	<b>0</b>	<b>555</b>	<b>44</b>	<b>13</b>	<b>5</b>	<b>84</b>	<b>119</b>	<b>69</b>	<b>55</b>	<b>28</b>	<b>66</b>	<b>11</b>	<b>2</b>	<b>7</b>	<b>39</b>

Right Angle:

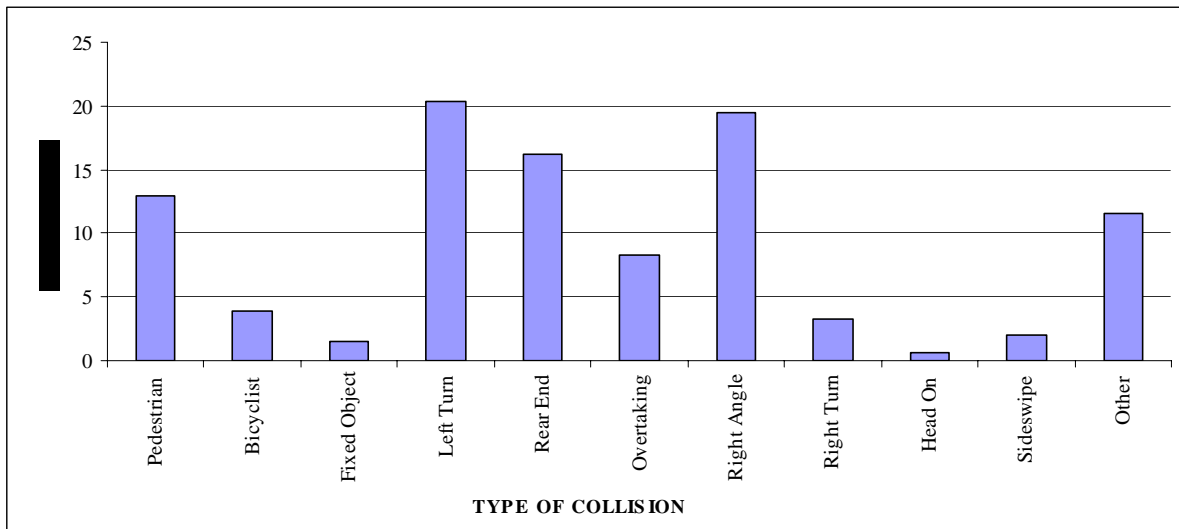
1. Coney Island Avenue/Guider Avenue (Ramp Belt Parkway) (5)
2. Ocean Parkway/Avenue U (5)
3. Coney Island Avenue/Neptune Avenue (4)
4. Ocean Parkway/Kings Highway

Rear End:

1. Coney Island Avenue/Avenue Z (7)
2. Ocean Parkway/Avenue T (6)
3. Ocean Parkway/Avenue Z (5)

Chart 6-2 shows the distribution of reportable accidents in 1996 including those involving pedestrians and bicyclists.

**Chart 6-2: 1997 Accidents by Collision Type**



Accident Severity/Frequency Factors

Approximately 77% of the intersections being analyzed had a severity factor greater than 7.0, while only approximately 38% of the intersections had a frequency factor greater than 6.5. The composite index was greater than 1.0 for all the intersections being analyzed. This indicates that the problems at these locations were more related to severity. This information is shown in



**Table 6-9: Traffic Accident Analysis (1997)**

No	Node #	Main St	Cross St	Fatal	Injury A	Injury B	Injury C	Property Damage	Non-Reportable	Total Accident	Severity Factor	Frequency Factor	Composite Index
1	8200	Avenue Z	Coney Island Ave	0	1	3	25	1	18	48	8.31	7.74	1.07
2	7440	86th St	Bay Pkwy	0	1	4	6	1	14	26	7.97	6.52	1.22
3	7085/7106/7133	Avenue T	Ocean Pkwy	0	2	0	11	1	8	22	7.97	5.28	1.51
4	7101/7126/7079	Ocean Pkwy	Avenue X	0	2	1	8	0	9	20	7.94	5.13	1.55
5	7931	Neptune Ave	W 17th St	0	1	4	4	3	5	17	7.92	5.67	1.40
6	7059/7064/7069	Neptune Ave	Ocean Pkwy	0	1	3	14	3	17	38	7.80	5.99	1.30
7	8044	Coney Island Ave	Neptune Ave	0	1	1	12	1	18	33	7.80	6.99	1.12
8	8074	Brighton Beach Ave	Coney Island Ave	0	1	1	12	0	10	24	7.80	6.36	1.23
9	7441	Bay Pkwy	Benson Ave	0	1	2	8	1	7	19	7.80	5.89	1.32
10	8032	Neptune Ave	W 5th St	0	1	2	7	1	14	25	7.77	6.44	1.21
11	7770	86th St	Avenue X	0	0	5	9	2	3	19	7.70	5.89	1.31
12	7086/7107/7134	Avenue S	Ocean Pkwy	0	1	1	10	0	6	18	7.70	5.13	1.50
13	8255	Avenue U	Coney Island Ave	0	1	1	7	1	7	17	7.63	5.67	1.35
14	7088/7136/7109	Ocean Pkwy	Kings Hwy	0	1	2	5	3	15	26	7.59	4.39	1.73
15	8316	Avenue Y	Coney Island Ave	0	0	4	7	0	7	18	7.47	5.78	1.29
16	8376	King Hwy	Coney Island Ave	0	0	3	8	0	15	26	7.36	6.52	1.13
17	6907	Coney Island Ave	Guider Ave (Ramp to Belt Pkwy)	0	0	1	15	3	20	39	7.30	7.33	1.00
18	7073/7099/7120	Ocean Pkwy	Avenue Z	0	1	3	9	1	16	30	7.23	5.78	1.25
19	6839	Cropsey Ave	Bay Pkwy	0	0	1	12	1	14	28	7.12	6.66	1.07
20	7927	Neptune Av	W 8th St	0	0	1	12	0	11	24	7.11	6.36	1.12
21	8241	Avenue S	Coney Island Ave	0	0	1	9	1	7	18	6.91	5.78	1.20
22	7084/7105/7132	Avenue U	Ocean Pkwy	0	1	2	6	1	5	15	6.90	4.80	1.44
23	7021	Shore Blvd	Emmons Ave	0	0	0	12	0	9	21	6.83	6.09	1.12
24	7442	Bath Ave	Bay Pkwy	0	0	1	8	1	9	19	6.83	5.89	1.16
25	8269	Avenue V	Coney Island Ave	0	0	0	6	0	11	17	6.15	5.67	1.08
26	7076/7100/7123	Avenue Y	Ocean Pkwy	0	0	0	6	1	4	11	5.74	4.16	1.38

### **C. 1998**

In 1998, there were 755 accidents recorded at the 27 intersections being analyzed, including Ocean Parkway/Brighton Beach Avenue. Approximately 50 percent of these accidents were reportable. There were two fatalities, 27 Class A injuries, 47 Class B injuries, and 463 Class C injuries. Figure 6-4 shows the distribution of accidents in the study area and Table 6-10 provides a detailed summary of the accidents at the selected locations, excluding Ocean Parkway/Brighton Beach Avenue.

The intersections Benson Avenue/Bay Parkway and Ocean Parkway/Avenue T each had one fatality. Neptune Avenue/Ocean Parkway had the highest number of accidents (45), followed by Coney Island Avenue/Guider Avenue with 43 accidents, and Cropsey Avenue/Bay Parkway with 39 accidents. The highest number of injuries occurred at Coney Island Avenue/Guider Avenue (47) and Neptune Avenue/Ocean Parkway (42).

#### Accidents Involving Pedestrians and Bicyclists

In 1998, there were 37 accidents involving pedestrians and 16 involving bicyclists. The Coney Island Avenue/Neptune Avenue and Coney Island Avenue/King Highway intersections had the highest number of pedestrian accidents with five each.

#### Accidents by Collision Type

Rear ends and left turn accidents each accounted for 19% of the accidents, followed by right angle collisions with 15%. The most critical intersections for the three most prominent types of collision were:

##### Left Turn:

1. 86<sup>th</sup> Street/Avenue X (9)
2. Bath Avenue/Bay Parkway (6)
3. Coney Island Avenue/Neptune Avenue (5)
4. Coney Island Avenue/Avenue Z (5)
5. Ocean Parkway/Avenue Z (5)
6. Benson Avenue/Bay Parkway (5)
7. Ocean Parkway/Neptune Avenue (5)

Figure 6-4: 1998 Accident History



**Table 6-10: Summary of Traffic Accidents (1998)**

No	Node #	Main St	Cross St	Total Acc	RPT	Non-RPT	Fatal	Injury	ACCIDENT TYPE												
									Peds	Bikes	Fixed Obj.	Wet Road	Night	Left Turn	Rear End	Over-Taking	Right Angle	Right Turn	Head On	Side-Swipe	Other
1	7059/ 7064/ 7069	Neptune Ave	Ocean Pkwy	45	23	22	0	42	4	0	0	9	8	5	5	2	5	0	1	0	5
2	6907	Coney Island Ave	Guider Ave (Ramp to Belt Pkwy)	43	26	17	0	47	0	1	0	15	9	3	12	2	2	0	0	0	7
3	6839	Cropsey Ave	Bay Pkwy	39	16	23	0	23	1	2	0	4	6	0	6	1	1	0	0	0	8
4	8200	Avenue Z	Coney Island Ave	37	14	23	0	24	1	0	0	3	5	5	3	0	3	0	0	0	3
5	7088/ 7136/ 7109	Ocean Pkwy	Kings Hwy	33	15	18	0	29	2	0	0	1	6	4	3	1	3	0	1	0	3
6	8032	Neptune Ave	W 5th St	32	12	20	0	16	1	2	0	5	6	2	2	0	2	0	0	0	6
7	7440	86th St	Bay Pkwy	31	13	18	0	25	4	0	0	1	5	0	2	3	2	1	0	0	5
8	7441	Bay Pkwy	Benson Ave	31	16	15	1	25	1	1	0	4	4	5	2	0	4	0	0	0	5
9	7931	Neptune Ave	W 17th St	31	15	16	0	18	2	0	0	4	4	3	4	0	0	0	2	1	5
10	8241	Avenue S	Coney Island Ave	29	13	16	0	22	1	1	0	3	3	2	3	1	2	1	0	0	4
11	7442	Bath Ave	Bay Pkwy	28	15	13	0	23	0	0	0	3	10	6	4	0	4	0	0	0	1
12	7086/ 7107/ 7134	Avenue S	Ocean Pkwy	28	15	13	0	26	2	0	0	2	4	3	5	1	2	0	0	0	4
13	8044	Coney Island Ave	Neptune Ave	27	18	9	0	33	5	0	0	4	3	5	2	0	4	0	1	0	6
14	8074	Brighton Beach Ave	Coney Island Ave	25	7	18	0	12	2	0	0	1	2	0	1	2	0	1	0	0	3
15	7084/ 7105/ 7132	Avenue U	Ocean Pkwy	25	14	11	0	26	2	2	0	3	6	2	2	1	3	0	0	0	6
16	7770	86th St	Avenue X	24	16	8	0	28	0	0	0	3	5	9	1	2	1	0	0	0	3
17	8255	Avenue U	Coney Island Ave	24	9	15	0	17	1	0	0	0	4	3	2	2	1	0	0	0	1
18	8316	Avenue Y	Coney Island Ave	24	15	9	0	16	0	1	0	3	6	2	1	4	4	2	0	0	2
19	7085/ 7106/ 7133	Avenue T	Ocean Pkwy	24	13	11	1	16	2	0	0	3	1	2	5	0	2	0	0	0	4
20	7021	Shore Blvd	Emmons Ave	22	9	13	0	12	1	1	0	1	3	3	2	1	1	0	0	0	2
21	7073/ 7099/ 7120	Ocean Pkwy	Avenue Z	22	14	8	0	29	0	0	0	4	6	5	3	0	2	0	0	0	4
22	8376	King Hwy	Coney Island Ave	20	13	7	0	20	5	1	0	5	5	1	3	1	1	0	0	1	6
23	7927	Neptune Av	W 8th St	19	14	5	0	21	0	1	0	3	4	3	0	2	6	0	0	0	3
24	7101/ 7126/ 7079	Ocean Pkwy	Avenue X	19	8	11	0	19	0	1	0	1	3	0	2	0	3	1	0	0	2
25	8269	Avenue V	Coney Island Ave	18	8	10	0	16	0	1	0	2	2	1	3	0	1	1	0	0	2
26	7076/ 7100/ 7123	Avenue Y	Ocean Pkwy	18	8	10	0	15	0	1	0	4	2	3	0	0	2	1	0	0	2
<b>TOTAL</b>				<b>718</b>	<b>359</b>	<b>359</b>	<b>2</b>	<b>600</b>	<b>37</b>	<b>16</b>	<b>0</b>	<b>91</b>	<b>122</b>	<b>77</b>	<b>78</b>	<b>26</b>	<b>61</b>	<b>8</b>	<b>5</b>	<b>2</b>	<b>102</b>

Rear End:

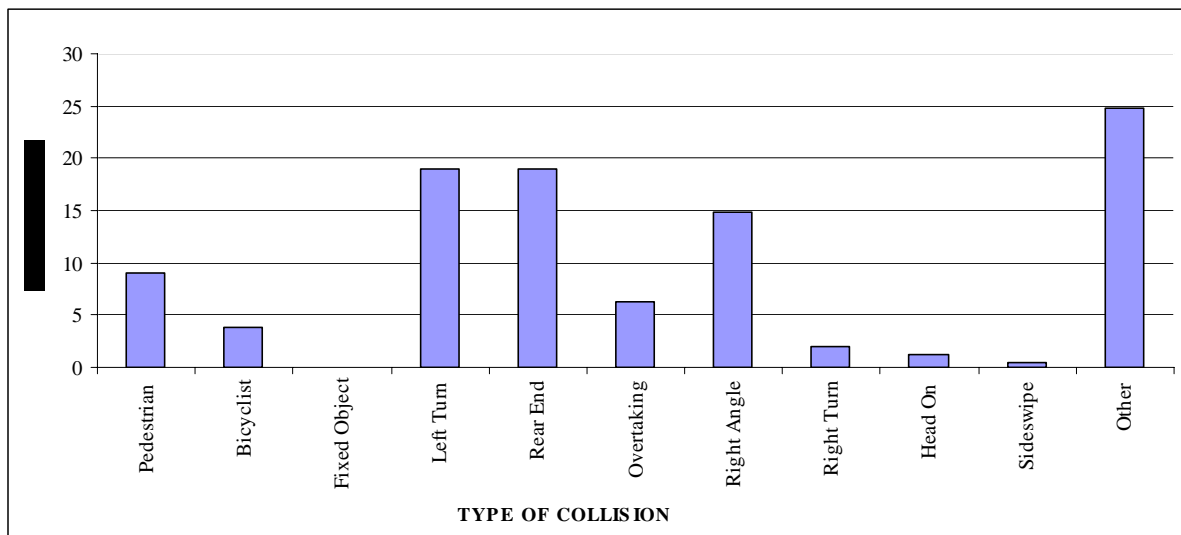
1. Coney Island Avenue/Guider Avenue (Ramp Belt Parkway) (12)
2. Cropsey Avenue/Bay Parkway (6)
3. Ocean Parkway/Neptune Avenue (5)
4. Ocean Parkway/Avenue S (5)
5. Ocean Parkway/Avenue T (5)

Right Angle:

1. Neptune Avenue/W 8<sup>th</sup> Street (6)
2. Ocean Parkway/Neptune Avenue (5)
3. Bay Parkway/Benson Avenue (4)
4. Bay Parkway/Bath Avenue (4)
5. Coney Island Avenue/Neptune Avenue (4)
6. Coney Island Avenue/Avenue Y (4)

In 1998, 25% of the accidents were categorized as “other”. Chart 6-3 shows the distribution of the types of reportable accidents, including those involving pedestrians and bicyclists.

**Chart 6-3: 1998 Accidents by Collision Type**



### Accident Severity/Frequency factors

Table 6-11 summarizes the type of injuries and the corresponding composite index for all of the intersections analyzed. Twenty-four locations had a severity factor greater than 7.0, 15 locations had frequency factors greater than 6.0, and 26 locations had a composite index greater than 1.0 which indicates that these locations may experience severe accidents.

**Table 6-11: 1998 Traffic Accident Analysis**

No	Node #	Main St	Cross St	Fatal	Injury A	Injury B	Injury C	Property Damage	Non-Reportable	Total Accident	Severity Factor	Frequency Factor	Composite Index
1	6907	Coney Island Ave	Guider Ave (Ramp to Belt Pkwy)	0	0	3	37	0	17	43	8.22	7.52	1.09
2	6839	Cropsey Ave	Bay Pkwy	0	2	3	18	1	23	39	8.46	7.33	1.15
3	8200	Avenue Z	Coney Island Ave	0	2	0	19	0	23	37	8.27	7.22	1.15
4	8032	Neptune Ave	W 5th St	0	3	1	12	0	20	32	8.49	6.93	1.23
5	7440	86th St	Bay Pkwy	0	1	1	19	1	18	31	8.00	6.87	1.16
6	7441	Bay Pkwy	Benson Ave	1	4	4	15	0	15	31	9.20	6.87	1.34
7	7931	Neptune Ave	W 17th St	0	0	2	14	1	16	31	7.43	6.87	1.08
8	8241	Avenue S	Coney Island Ave	0	1	1	18	1	16	29	7.97	6.73	1.18
9	7442	Bath Ave	Bay Pkwy	0	0	0	20	0	13	28	7.33	6.66	1.10
10	8044	Coney Island Ave	Neptune Ave	0	1	4	28	0	9	27	8.42	6.59	1.28
11	7059/7064/7069	Neptune Ave	Ocean Pkwy	0	0	3	31	1	22	45	7.51	6.52	1.15
12	8074	Brighton Beach Ave	Coney Island Ave	0	0	1	10	0	18	25	6.98	6.44	1.08
13	7770	86th St	Avenue X	0	0	1	22	1	8	24	7.59	6.36	1.19
14	8255	Avenue U	Coney Island Ave	0	0	0	15	0	15	24	7.05	6.36	1.11
15	7021	Shore Blvd	Emmons Ave	0	1	0	11	0	13	22	7.63	6.18	1.23
16	7088/7136/7109	Ocean Pkwy	Kings Hwy	0	1	1	22	0	18	33	7.73	5.99	1.29
17	8376	King Hwy	Coney Island Ave	0	1	0	17	0	7	20	7.83	5.99	1.31
18	7927	Neptune Av	W 8th St	0	2	0	16	0	5	19	8.20	5.89	1.39
19	8269	Avenue V	Coney Island Ave	0	1	5	8	0	10	18	8.11	5.78	1.40
20	7076/7100/7123	Avenue Y	Ocean Pkwy	0	2	3	18	0	10	18	7.59	5.78	1.31
21	7073/7099/7120	Ocean Pkwy	Avenue Z	0	1	4	20	1	8	22	8.11	5.67	1.43
22	7085/7106/7133	Avenue T	Ocean Pkwy	1	1	0	12	0	11	24	8.44	5.55	1.52
23	7086/7107/7134	Avenue S	Ocean Pkwy	0	0	2	24	0	13	28	7.16	5.28	1.36
24	7084/7105/7132	Avenue U	Ocean Pkwy	0	2	4	16	0	11	25	8.04	5.28	1.52
25	7101/7126/7079	Ocean Pkwy	Avenue X	0	1	2	10	0	11	19	7.70	4.97	1.55
26	8316	Avenue Y	Coney Island Ave	0	0	2	11	0	9	24	7.28	3.36	2.17

#### **D. 1999**

The highest number of accidents (733) at the 26 intersections being analyzed, excluding Ocean Parkway/Brighton Beach Avenue, was recorded in 1999. Two fatalities were recorded, both along the Ocean Parkway corridor, one at the intersection with Avenue S, and the other at the intersection with Avenue U. There were 526 injuries (25 Class A, 53 Class B, and 448 Class C) in 1999 at the locations being analyzed. Figure 6-5 shows the distribution of accidents in the study area and Table 6-12 provides a detailed summary of the accidents at the selected locations, excluding Ocean Parkway/Brighton Beach Avenue. The intersection of Neptune Avenue/Ocean Parkway had the highest number of accidents (59), followed by Coney Island Avenue/Avenue Z with 46 accidents, and Coney Island Avenue/Neptune Avenue with 38 accidents.

#### Accidents Involving Pedestrians and Bicyclists

In 1999, there were 46 accidents involving pedestrians and 10 with bicyclists. The Coney Island Avenue/Avenue U intersection recorded the highest pedestrian accidents with six.

#### Accidents by Collision Type

Twenty-five percent of the accidents were rear ends, 18% right angles, and 16% left turn collisions. The intersections with the highest number of accidents for the three most prominent collision types were:

#### Rear End:

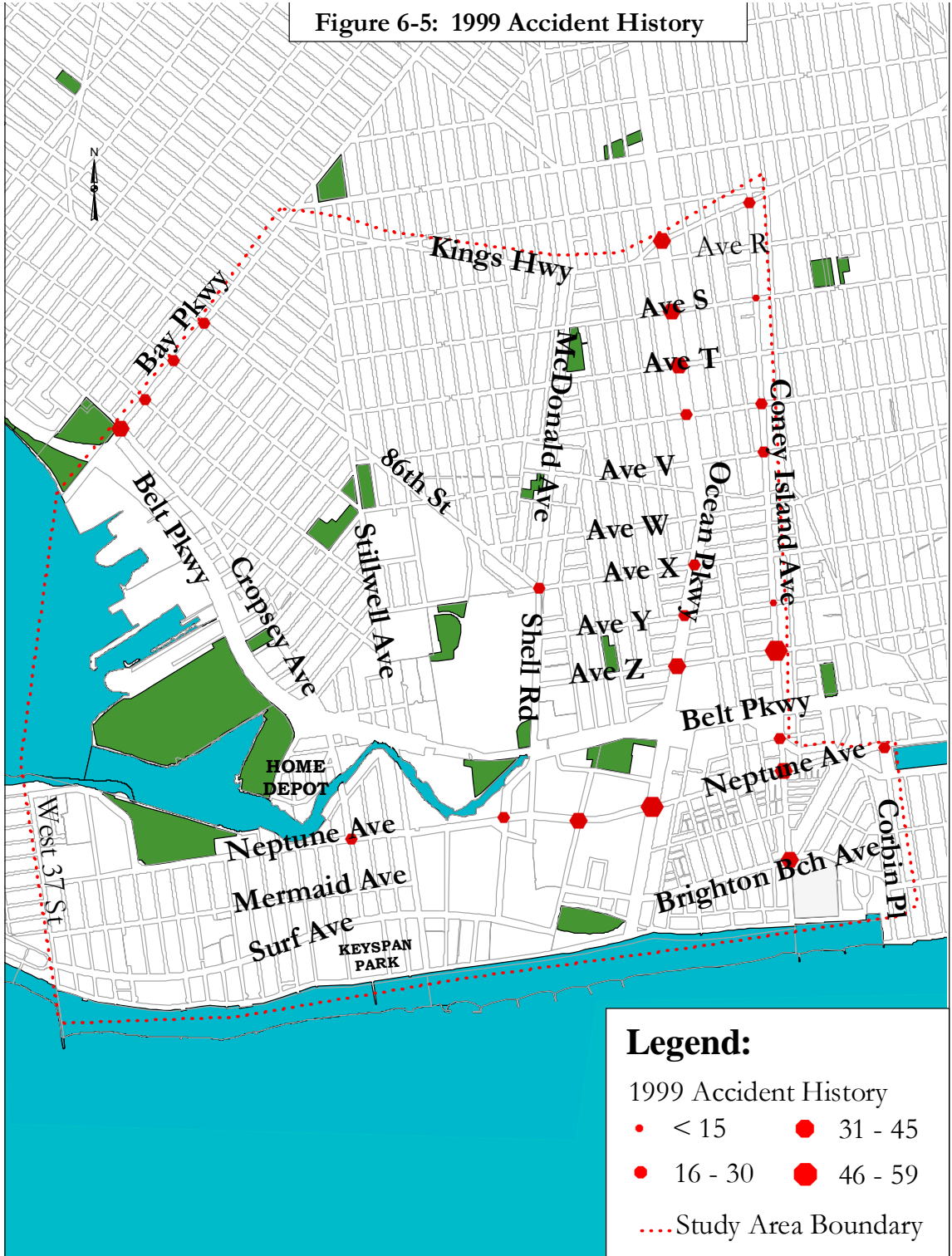
1. Ocean Parkway/Avenue T (7)
2. Ocean Parkway/Avenue S (6)
3. Avenue X/86<sup>th</sup> Street (6)
4. Ocean Parkway/Avenue U (6)

#### Right Angle:

1. Neptune Avenue/Ocean Parkway (14)
2. Coney Island Avenue/Neptune Avenue (6)
3. Ocean Parkway/Kings Highway (5)
4. Coney Island Avenue/Guider Avenue (Ramp to Belt Parkway) (5)



Figure 6-5: 1999 Accident History



**Table 6-12: Summary of Traffic Accidents (1999)**

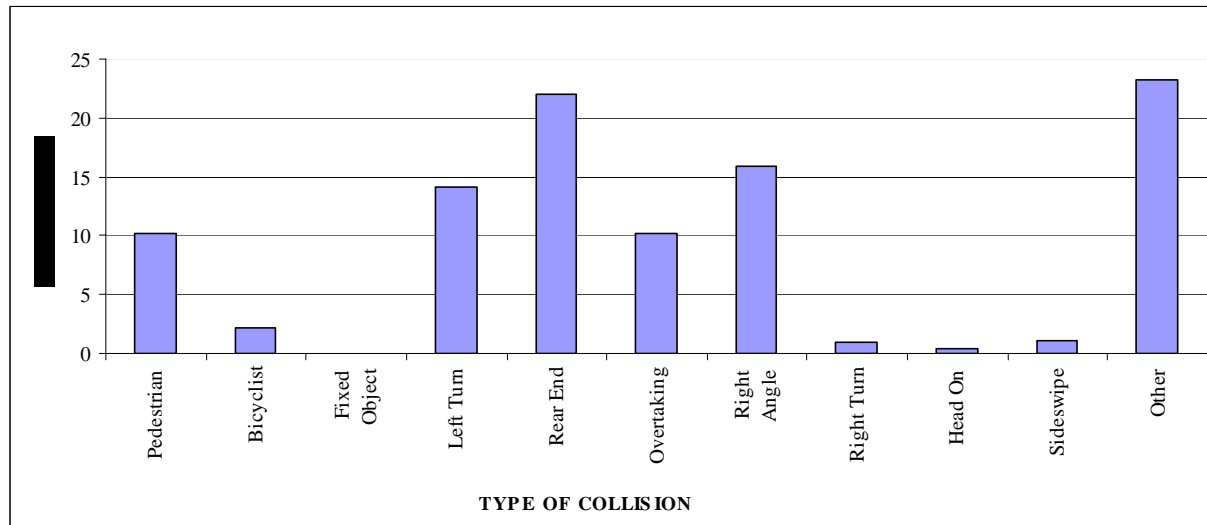
No	Node #	Main St	Cross St	Total Acc	ACCIDENT TYPE																
					RPT	Non-RPT	Fatal	Injury	Peds	Bikes	Fixed Obj.	Wet Road	Night	Left Turn	Rear End	Over-Taking	Right Angle	Right Turn	Head On	Side-Swipe	Other
1	7059/ 7064/ 7069	Neptune Ave	Ocean Pkwy	59	32	27	0	50	2	1	0	9	13	8	3	3	14	0	0	0	4
2	8200	Avenue Z	Coney Island Ave	46	23	23	0	23	5	0	0	0	6	0	5	5	3	1	0	1	8
3	8044	Coney Island Ave	Neptune Ave	38	22	16	0	33	2	0	0	6	8	2	3	3	6	1	0	0	7
4	8032	Neptune Ave	W 5th St	35	16	19	0	26	2	0	0	3	5	4	3	2	2	0	0	0	5
5	7086/ 7107/ 7134	Avenue S	Ocean Pkwy	35	21	14	1	44	2	0	0	5	12	7	6	0	3	0	0	0	5
6	7088/ 7136/ 7109	Ocean Pkwy	Kings Hwy	35	21	14	0	38	2	1	0	3	10	4	5	2	5	0	0	0	5
7	6839	Cropsey Ave	Bay Pkwy	32	18	14	0	24	2	1	0	3	8	3	5	4	2	0	0	0	4
8	8074	Brighton Beach Ave	Coney Island Ave	32	12	20	0	15	2	1	0	4	4	1	4	3	0	0	0	0	4
9	7073/ 7099/ 7120	Ocean Pkwy	Avenue Z	31	17	14	0	25	2	0	0	1	7	3	4	3	2	0	0	1	4
10	7085/ 7106/ 7133	Avenue T	Ocean Pkwy	31	16	15	0	23	0	0	0	3	4	5	7	0	3	0	1	0	0
11	7770	86th St	Avenue X	30	18	12	0	23	1	0	0	3	6	4	6	3	1	0	0	1	3
12	8255	Avenue U	Coney Island Ave	30	17	13	0	15	6	1	0	2	5	0	5	3	1	0	0	0	8
13	6907	Coney Island Ave	Guider Ave (Ramp to Belt Pkwy)	29	17	12	0	29	1	0	0	10	8	0	5	0	5	0	0	0	7
14	7440	86th St	Bay Pkwy	27	12	15	0	14	5	0	0	3	5	0	1	0	2	0	0	0	9
15	7442	Bath Ave	Bay Pkwy	27	17	10	0	20	4	1	0	2	5	4	3	0	2	0	0	1	7
16	7931	Neptune Ave	W 17th St	27	14	13	0	21	0	0	0	2	6	1	4	4	2	1	0	1	1
17	7927	Neptune Av	W 8th St	24	14	10	0	25	2	0	0	4	4	2	4	0	4	0	0	0	4
18	7084/ 7105/ 7132	Avenue U	Ocean Pkwy	23	14	9	1	20	3	0	0	2	7	0	6	0	3	0	0	0	5
19	8376	King Hwy	Coney Island Ave	22	7	15	0	4	1	1	0	2	2	0	1	2	0	1	0	0	3
20	7101/ 7126/ 7079	Ocean Pkwy	Avenue X	21	12	9	0	21	0	0	0	1	3	2	5	1	3	0	0	0	1
21	8269	Avenue V	Coney Island Ave	20	11	9	0	21	0	0	0	2	4	3	2	3	0	0	1	0	2
22	7021	Shore Blvd	Emmons Ave	19	10	9	0	15	1	0	0	1	2	4	1	1	1	0	0	0	3
23	7441	Bay Pkwy	Benson Ave	18	13	5	0	11	1	1	0	3	1	3	5	2	0	0	0	0	3
24	7076/ 7100/ 7123	Avenue Y	Ocean Pkwy	16	9	7	0	14	0	2	0	0	5	2	2	1	2	0	0	0	2
25	8316	Avenue Y	Coney Island Ave	15	5	10	0	9	0	0	0	0	1	1	1	1	2	0	0	0	0
26	8241	Avenue S	Coney Island Ave	11	7	4	0	10	0	0	0	0	1	1	1	0	4	0	0	0	1
<b>TOTAL</b>				733	395	338	2	573	46	10	0	74	142	64	97	46	72	4	2	5	105

Left Turn:

1. Ocean Parkway/Neptune Avenue (8)
2. Ocean Parkway/Avenue S (7)
3. Ocean Parkway/Avenue T (5)

Chart 6-4 shows the distribution of the types of reportable accidents, including those involving pedestrians and bicyclists.

**Chart 6-4: 1999 Accidents by Collision Type**



Accident Severity/Frequency factors

As shown in Table 6-13, twenty-two of the 26 locations studied had severity factors greater than 7.0; and, 14 had frequency factors greater than 6.0. The composite index calculation showed that 25 of the 26 locations had a composite index greater than 1.0. Thus, in 1999 accidents at a majority of the intersections were skewed towards severity.

**Table 6-13: 1999 Traffic Accident Analysis**

No	Node #	Main St	Cross St	Fatal	Injury A	Injury B	Injury C	Property Damage	Non-Reportable	Total Accident	Severity Factor	Frequency Factor	Composite Index
1	8200	Avenue Z	Coney Island Avenue	0	1	1	21	2	23	46	8.05	7.66	1.05
2	8044	Coney Island Ave	Neptune Avenue	0	1	3	27	1	16	38	8.34	7.28	1.15
3	8032	Neptune Ave	W 5th Street	0	1	1	22	0	19	35	8.07	7.11	1.14
4	6839	Cropsey Ave	Bay Pkwy	0	1	1	21	0	14	32	8.05	6.93	1.16
5	8074	Brighton Beach Ave	Coney Island Avenue	0	0	0	15	0	20	32	7.05	6.93	1.02
6	7770	86th Street	Avenue X	0	1	4	18	1	12	30	8.24	6.80	1.21
7	8255	Avenue U	Coney Island Ave	0	0	2	13	0	13	30	7.38	6.80	1.09
8	6907	Coney Island Ave	Guider Ave (Ramp to Belt Pkwy)	0	1	2	26	0	12	29	8.24	6.73	1.22
9	7440	86th Street	Bay Pkwy	0	1	0	13	3	15	27	7.71	6.59	1.17
10	7442	Bath Ave	Bay Pkwy	0	1	7	10	0	10	27	8.32	6.59	1.26
11	7931	Neptune Ave	W 17th St	0	1	3	16	1	13	27	8.12	6.59	1.23
12	7059/7064/7069	Neptune Ave	Ocean Pkwy	0	1	8	32	0	27	59	8.04	6.36	1.26
13	7927	Neptune Av	W 8th St	0	2	5	18	0	10	24	8.58	6.36	1.35
14	8376	King Hwy	Coney Island Ave	0	0	0	4	0	15	22	5.78	6.18	0.94
15	7088/7136/7109	Ocean Pkwy	Kings Hwy	0	3	4	13	0	14	35	8.71	5.99	1.45
16	8269	Avenue V	Coney Island Ave	0	0	2	15	0	9	20	7.47	5.99	1.25
17	7021	Shore Blvd	Emmons Ave	0	0	1	13	0	9	19	7.17	5.89	1.22
18	7441	Bay Pkwy	Benson Ave	0	1	3	7	0	5	18	7.89	5.78	1.37
19	7086/7107/7134	Avenue S	Ocean Pkwy	1	3	4	35	1	14	35	8.95	5.55	1.61
20	8316	Avenue Y	Coney Island Ave	0	0	0	9	0	10	15	6.54	5.42	1.21
21	7073/7099/7120	Ocean Pkwy	Avenue Z	0	2	0	22	0	14	31	7.82	5.28	1.48
22	7085/7106/7133	Avenue T	Ocean Pkwy	0	0	1	21	0	15	31	6.90	4.80	1.44
23	7076/7100/7123	Avenue Y	Ocean Pkwy	0	1	1	12	0	7	16	7.73	4.80	1.61
24	8241	Avenue S	Coney Island Ave	0	1	0	9	0	4	11	7.55	4.80	1.57
25	7084/7105/7132	Avenue U	Ocean Pkwy	1	2	0	16	0	9	23	8.63	4.61	1.87
26	7101/7126/7079	Ocean Pkwy	Avenue X	0	0	0	20	0	9	21	6.97	4.61	1.51

## **E. 2000**

There were 699 accidents in 2000 at the 26 locations studied, excluding Ocean Parkway/Brighton Beach Avenue. Fifty-three percent of these accidents were reportable. One fatality occurred at the intersection of Ocean Parkway/Avenue U, and there were 24 Class A, 28 Class B, and 427 Class C injuries. The intersection of Neptune Avenue/Ocean Parkway had the highest number of accidents (52) with the highest number of Class A injuries (4) and total injuries (41). Figure 6-6 shows the distribution of accidents in the study area and Table 6-14 provides a detailed summary of the accidents at the selected locations, excluding Ocean Parkway/Brighton Beach Avenue. Coney Island Avenue/Neptune Avenue had the second highest number of accidents (47), but it had the highest number of accidents involving bicyclist (4). The Bay Parkway/Cropsey Avenue intersection and Bay Parkway/86<sup>th</sup> Street intersection ranked third and fourth, with 34 accidents.

### Accidents Involving Pedestrians and Bicyclists

In 2000 there were 37 accidents involving pedestrians and 15 accidents involving bicyclists. Bay Parkway/86<sup>th</sup> Street had the highest number of pedestrian accidents with 7. The intersection of Coney Island Avenue/Kings Highway had five pedestrian accidents. The highest number of accidents involving bicyclist occurred at the intersection of Coney Island Avenue/Neptune Avenue where four accidents involving bicyclist occurred.

### Accidents by Collision Type

The analysis of the accidents by collision type showed that rear ends accounted for 23% of the accidents, followed by left turns (18%) and right angles (17%). The most critical intersections for each of the most prominent collision type were:

#### Rear End:

1. Ocean Parkway/Neptune Avenue (9)
2. Coney Island Avenue/Neptune Avenue (7)
3. Coney Island Avenue/Avenue Z (5)
4. Neptune Avenue/West 17<sup>th</sup> Street (5)
5. Coney Island Avenue/Avenue S (5)
6. Avenue X/86<sup>th</sup> Street (5)

Figure 6-6: 2000 Accident History



**Table 6-14: Summary of Traffic Accidents (2000)**

No	Node #	Main St	Cross St	Total Acc	ACCIDENT TYPE																
					RPT	Non-RPT	Fatal	Injury	Peds	Bikes	Fixed Obj.	Wet Road	Night	Left Turn	Rear End	Over-Taking	Right Angle	Right Turn	Head On	Side-Swipe	Other
1	7059/ 7064/ 7069	Neptune Ave	Ocean Pkwy	52	33	19	0	41	1	1	0	3	9	7	9	3	7	0	1	0	6
2	8044	Coney Island Ave	Neptune Ave	47	18	29	0	19	0	4	0	1	4	2	7	3	1	0	0	1	4
3	6839	Cropsey Ave	Bay Pkwy	34	19	15	0	32	2	1	0	3	4	6	3	2	3	0	0	0	5
4	7440	86th St	Bay Pkwy	34	15	19	0	18	7	0	0	4	7	1	1	1	1	0	0	0	11
5	7085/ 7106/ 7133	Avenue T	Ocean Pkwy	32	17	15	0	29	1	0	0	7	4	4	2	1	5	0	0	0	5
6	8200	Avenue Z	Coney Island Ave	31	16	15	0	22	3	2	0	2	4	3	5	2	0	1	0	0	5
7	7073/ 7099/ 7120	Ocean Pkwy	Avenue Z	31	15	16	0	23	2	1	0	4	5	5	3	1	2	1	0	0	3
8	8074	Brighton Beach Ave	Coney Island Ave	28	11	17	0	10	0	1	0	2	6	1	2	2	2	0	0	2	2
9	7084/ 7105/ 7132	Avenue U	Ocean Pkwy	28	14	14	1	14	1	2	0	2	7	3	2	1	3	0	0	0	5
10	7931	Neptune Ave	W 17th St	27	13	14	0	25	1	0	0	3	4	2	5	3	0	0	0	0	3
11	8032	Neptune Ave	W 5th St	27	13	14	0	14	3	0	0	1	4	5	2	1	0	0	0	0	5
12	7441	Bay Pkwy	Benson Ave	25	14	11	0	20	1	0	0	2	3	1	4	3	1	0	0	0	5
13	6907	Coney Island Ave	Guider Ave (Ramp to Belt Pkwy)	24	12	12	0	16	0	1	0	2	7	0	3	3	2	0	0	0	4
14	8255	Avenue U	Coney Island Ave	24	13	11	0	16	1	0	0	5	4	2	4	1	4	0	0	1	1
15	8316	Avenue Y	Coney Island Ave	24	10	14	0	8	1	0	0	3	2	2	1	2	4	0	0	0	1
16	8241	Avenue S	Coney Island Ave	23	16	7	0	24	0	0	0	2	11	0	5	2	7	0	0	0	2
17	7086/ 7107/ 7134	Avenue S	Ocean Pkwy	23	11	12	0	17	2	0	0	2	5	1	4	0	2	0	1	0	3
18	7770	86th St	Avenue X	22	15	7	0	26	1	0	0	4	5	3	5	0	0	2	0	2	3
19	7021	Shore Blvd	Emmons Ave	21	10	11	0	10	0	0	0	1	2	4	1	2	2	1	0	0	0
20	7442	Bath Ave	Bay Pkwy	21	14	7	0	17	2	0	0	4	5	5	3	2	0	0	0	0	4
21	7927	Neptune Av	W 8th St	21	7	14	0	14	0	1	0	0	3	2	2	1	1	0	0	0	1
22	8269	Avenue V	Coney Island Ave	21	10	11	0	14	0	0	0	1	5	0	3	1	5	0	1	0	0
23	8376	King Hwy	Coney Island Ave	21	11	10	0	14	5	0	0	2	6	2	0	2	1	0	1	0	5
24	7076/ 7100/ 7123	Avenue Y	Ocean Pkwy	21	16	5	0	20	0	0	0	3	7	4	1	2	5	1	0	0	3
25	7088/ 7136/ 7109	Ocean Pkwy	Kings Hwy	19	16	3	0	30	2	1	0	1	5	1	4	1	2	0	1	0	7
26	7101/ 7126/ 7079	Ocean Pkwy	Avenue X	18	9	9	0	8	1	0	0	1	3	2	3	0	2	0	1	0	1
<b>TOTAL</b>				<b>699</b>	<b>368</b>	<b>331</b>	<b>1</b>	<b>501</b>	<b>37</b>	<b>15</b>	<b>0</b>	<b>65</b>	<b>131</b>	<b>68</b>	<b>84</b>	<b>42</b>	<b>62</b>	<b>6</b>	<b>6</b>	<b>6</b>	<b>94</b>

Left Turn:

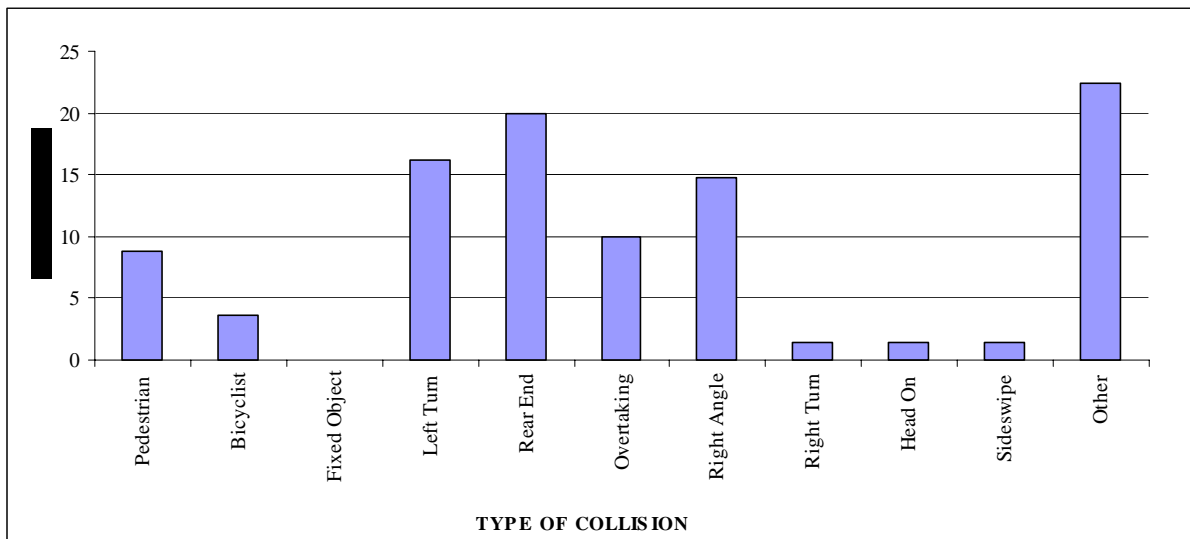
1. Ocean Parkway/Neptune Avenue (7)
2. Cropsey Avenue/Bay Parkway (6)
3. Avenue Z/Ocean Parkway (5)
4. Neptune Avenue/West 5<sup>th</sup> Street (5)
5. Bath Avenue/Bay Parkway (5)

Right Angle:

1. Neptune Avenue/Ocean Parkway (7)
2. Coney Island Avenue/Avenue S (7)
3. Ocean Parkway/Avenue T (5)
4. Coney Island Avenue/Avenue V (5)
5. Ocean Parkway/Avenue Y (5)

Chart 6-5 below shows the distribution of accidents by type, including those involving pedestrians and bicyclists.

**Chart 6-5: 2000 Accidents by Collision Type**





### Accident Severity/Frequency Factors

The severity and frequency factors, the composite index, and the distribution of the accidents by injury type at the 26 intersections analyzed are shown in Table 6-15. Twenty-two of the 26 intersections had severity factors greater than 7.0, and 19 of the 26 intersections had frequency factors greater than 6.0. All intersections had a composite index greater than 1.0 indicating that accidents are skewed towards severity at these locations.

**Table 6-15: 2000 Traffic Accident Analysis**

No	Node #	Main St	Cross St	Fatal	Injury A	Injury B	Injury C	Property Damage	Non-Reportable	Total Accident	Severity Factor	Frequency Factor	Composite Index
1	6839	Cropsey Ave	Bay Pkwy	0	4	0	27	0	15	34	8.84	7.05	1.25
2	7770	86th St	Avenue X	0	3	2	21	1	7	22	8.67	6.18	1.40
3	7059/7064/7069	Neptune Ave	Ocean Pkwy	0	3	4	31	0	19	52	8.42	6.09	1.38
4	8044	Coney Island Ave	Neptune Ave	0	2	2	15	0	29	47	8.34	7.70	1.08
5	7073/7099/7120	Ocean Pkwy	Avenue Z	0	2	1	20	0	16	31	8.18	4.61	1.77
6	7084/7105/7132	Avenue U	Ocean Pkwy	1	0	0	14	0	14	28	8.18	3.89	2.10
7	7085/7106/7133	Avenue T	Ocean Pkwy	0	1	5	22	0	15	32	8.13	4.61	1.76
8	8032	Neptune Ave	W 5th St	0	2	0	12	0	14	27	8.12	6.59	1.23
9	8200	Avenue Z	Coney Island Ave	0	1	2	19	0	15	31	8.09	6.87	1.18
10	7442	Bath Ave	Bay Pkwy	0	1	2	11	0	7	21	7.89	6.09	1.30
11	6907	Coney Island Ave	Guider Ave (Ramp to Belt Pkwy)	0	1	1	12	1	12	24	7.80	6.36	1.23
12	8376	King Hwy	Coney Island Ave	0	1	1	12	0	10	21	7.80	6.09	1.28
13	7931	Neptune Ave	W 17th St	0	0	1	24	0	14	27	7.66	6.59	1.16
14	8241	Avenue S	Coney Island Ave	0	0	1	23	0	7	23	7.63	6.27	1.22
15	7441	Bay Pkwy	Benson Ave	0	0	1	19	1	11	25	7.47	6.44	1.16
16	7088/7136/7109	Ocean Pkwy	Kings Hwy	0	1	0	19	0	3	19	7.46	3.22	2.32
17	8269	Avenue V	Coney Island Ave	0	0	2	12	0	11	21	7.33	6.09	1.20
18	8255	Avenue U	Coney Island Ave	0	0	1	15	0	11	24	7.28	6.36	1.14
19	7086/7107/7134	Avenue S	Ocean Pkwy	0	1	0	16	0	12	23	7.27	2.77	2.62
20	7440	86th St	Bay Pkwy	0	0	0	18	0	19	34	7.23	7.05	1.03
21	7927	Neptune Av	W 8th St	0	0	1	13	0	14	21	7.17	6.09	1.18
22	7101/7126/7079	Ocean Pkwy	Avenue X	0	1	0	7	0	9	18	7.11	4.39	1.62
23	7076/7100/7123	Avenue Y	Ocean Pkwy	0	0	1	19	0	5	21	6.89	3.58	1.92
24	8074	Brighton Beach Ave	Coney Island Ave	0	0	0	10	0	17	28	6.66	6.66	1.00
25	8316	Avenue Y	Coney Island Ave	0	0	0	8	0	14	24	6.44	6.36	1.01
26	7021	Shore Blvd	Emmons Ave	0	0	0	8	0	11	21	6.43	6.09	1.06

#### **F. Accident Analysis for Ocean Parkway/Brighton Beach Avenue (1998-2000)**

It was necessary to conduct a special analysis for the intersection of Ocean Parkway/Brighton Beach Avenue because data for this location was coded differently from other intersections. Also, data was only available for three (1998-2000) of the five analysis years. According to the data this intersection had an average of 31 accidents per year for the three years analyzed. A summary of the accident history at this intersection is shown below in Table 6-16.

**Table 6-16: Brighton Beach Avenue/Ocean Parkway Accident Data**

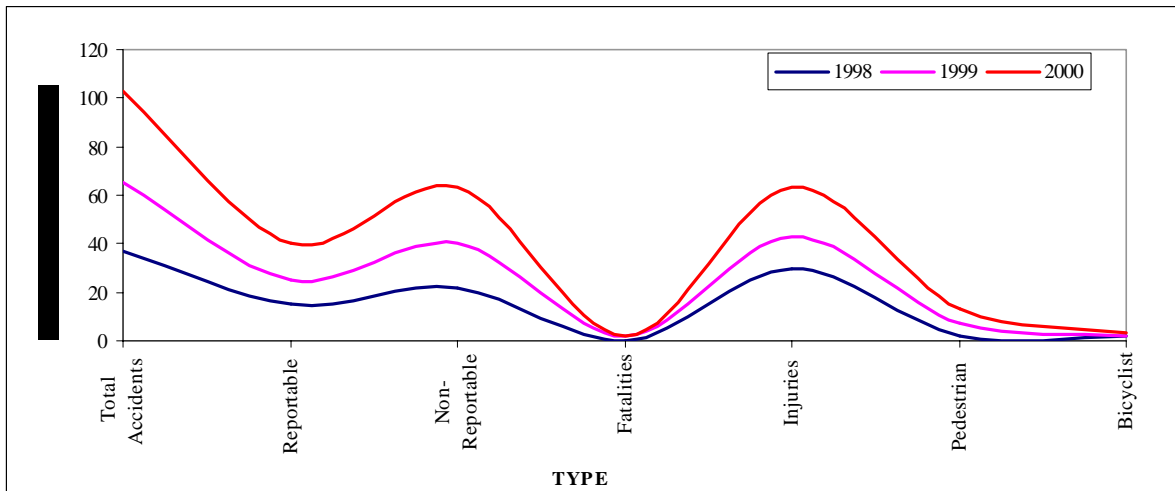
<b>Year</b>	<b>Total Accidents</b>	<b>Reportable</b>	<b>Non-Reportable</b>	<b>Fatalities</b>	<b>Injuries</b>	<b>Pedestrian</b>	<b>Bicyclist</b>
1998	37	15	22	0	30	2	2
1999	28	10	18	2	13	5	0
2000	38	15	23	0	20	6	1

In 1998 there were 37 accidents, of which 15 were reportable. There were no fatalities recorded for the year. The location had 30 injuries, two involving pedestrians, and two with bicyclists.

In 1999 there were 28 accidents, two of which resulted in fatalities. Thirteen injuries were reported from ten reportable accidents. There were five (5) accidents involving pedestrians.

In 2000 there were 38 accidents with 15 reportable. There were no fatalities recorded, but there were 20 injuries. Six pedestrians and one bicyclist were involved in accidents at this location during the year. Chart 6-6 shows the distribution of accidents by year.

**Chart 6-6: Distribution of Accidents at Brighton Beach Avenue/Ocean Parkway (1998-2000)**



#### 6.4 Summary of Accident Analysis

As shown in Chart 6-7 the number of accidents at the 26 intersections analyzed remained relatively constant throughout the five-year analysis period (ranging from 626 to 733), except in 1997 where there was a slight decrease.

**Chart 6-7: Total Accidents (1996-2000)**

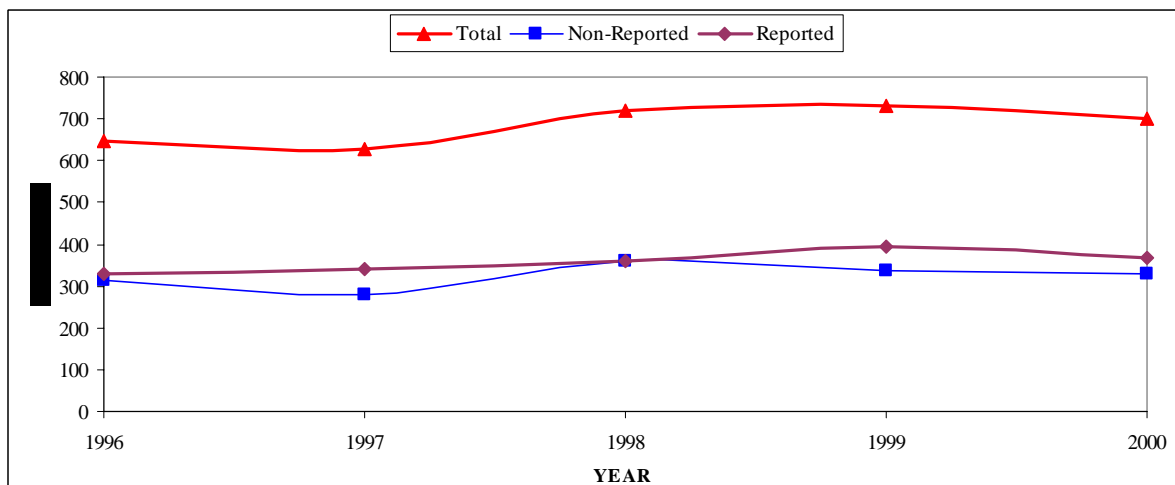


Table 6-17 provides a summary of the accident history at the 26 locations, excluding Ocean Parkway/Brighton Beach Avenue, analyzed for the five year analysis period.

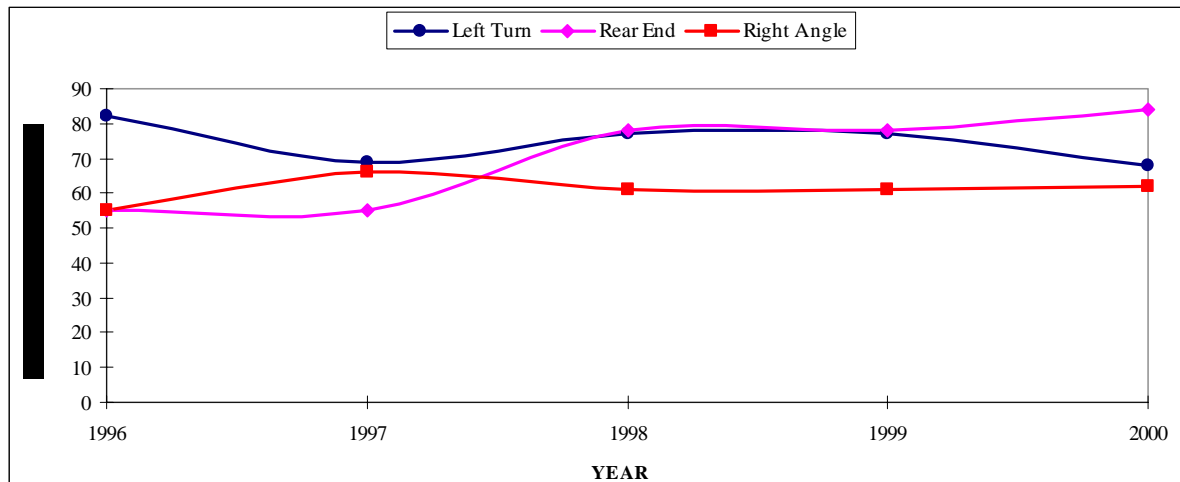
**Table 6-17: Five-Year Accident Summary (1996-2000)**

Year	Total Accidents	Reportable	Non-Reportable	Fatalities	Injuries	Pedestrian	Bicyclist
1996	646	331	315	0	488	37	23
1997	626	339	279	0	555	44	13
1998	718	359	359	2	600	37	16
1999	733	395	338	2	573	46	10
2000	699	368	331	1	501	37	15
<b>Total</b>	<b>3422</b>	<b>1792</b>	<b>1622</b>	<b>5</b>	<b>2717</b>	<b>201</b>	<b>77</b>

Accidents by Collision Type

Left turns, rear ends, and right angles were the most common collision types during the five years analyzed. Chart 6-8 shows the distribution of accidents by collision type. Of the three collision types, rear ends increased slightly during the analysis period, while left turns and right angles remained relatively constant.

**Chart 6-8: Accidents by Collision Type (1996-2000)**

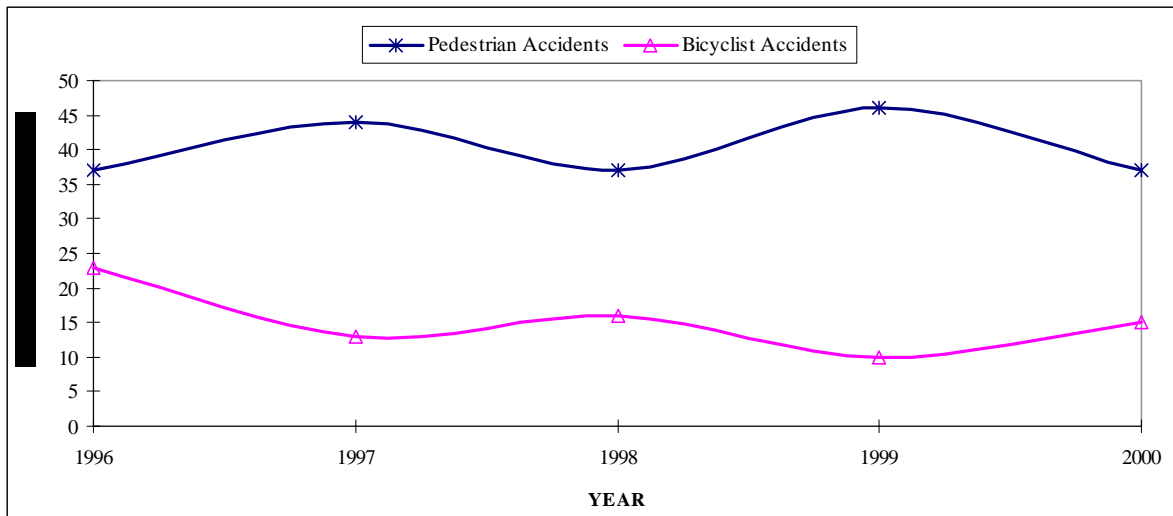


The Ocean Parkway/Neptune Avenue intersection experienced the highest number of right angles and left turn accidents with an average of fourteen (14) and nine (9) accidents per year, respectively. For rear ends, the Ocean Parkway/Avenue T intersection had an average of seven accidents per year.

### Pedestrians/Bicyclist Accidents

As shown in Chart 6-9 there is no evident trend or pattern to accidents involving pedestrians and bicyclists. No strong correlation can be established between accidents involving pedestrians and bicyclists, or any other factor. Paradoxically, pedestrian and bicyclist accidents tend to move in the opposite direction during the year, which confirms the fact that accidents are indeed random. When pedestrian accidents increased, bicyclists' accidents decreased and vice versa.

**Chart 6-9: Total Pedestrians/Bicyclists Accidents (1996-2000)**



### Severity/Frequency of Accidents

The main objective of this study is to identify locations that experience higher than average accidents and with greater severity, to determine the causes (identify if there are geometric or traffic control deficiencies), and to develop corrective measures. Table 6-18 shows the locations with the highest frequency and severity factors for each year analyzed.

**Table 6-18: Critical Severity and Frequency Factor Locations (1996-2000)**

<b>Year</b>	<b>Locations</b>	
1996	SF	Neptune Avenue/Ocean Parkway
	FF	Coney Island Avenue/Guider Avenue (Ramp Belt Parkway)
1997	SF	Coney Island Avenue /Avenue Z
	FF	Coney Island Avenue/Avenue Z
1998	SF	Bay Parkway/Benson Avenue
	FF	Coney Island Avenue/Guider Avenue (Ramp Belt Parkway)
1999	SF	Avenue S/Ocean Parkway
	FF	Coney Island Avenue/Avenue Z
2000	SF	Cropsey Avenue/Bay Parkway
	FF	Coney Island Avenue/Neptune Avenue

This clearly shows that the Coney Island Avenue/Avenue Z intersection is a critical location, followed by Coney Island Avenue/Guider Avenue.