



Crime Mapping Washington's Deception Pass State Park

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History of Crime Mapping

- Early 1990's with the advent of CompStat by New York City Police Department
- New York saw violent crime tumble 70% in the next decade, major U.S. cities and Europe followed
- 1994 Violent Crime Control and Law Enforcement Act provided funding for crime prevention programs, to which GIS functionality was added to agencies using CompStat

History of Crime Mapping (cont.)

- Countries outside of Europe are now utilizing CompStat and GIS to study crime in their cities.
- Brazilian regional capitol of Belo Horizonte's police force studied shantytowns for crime, found only 6 of the 110 accounted for majority of all homicides

Crime in Parks

- State and National Park systems have become the “new frontier” for crime by poachers, smugglers, and thieves.
- Oregon Parks and Recreation Commission, closed Wayside State Park in 2007 due to increasing crime and criminal activity

Crime in Parks

- Now crime mapping techniques are being used to study crime in non-urban environments such as parks and national forests
- Journal of Forestry, “Crime Mapping and Spatial Analysis in National Forests”; M.G. Wing and J. Tynon, 2006
- Utilized crime mapping techniques to study crime in Oregon and Washington National Forests utilizing the LEIMARS (Law Enforcement & Investigations Attainment Reporting System) database of crime incidents with lat/long coordinates

Project Purpose

- Utilize crime mapping techniques to understand crime incidents in Deception Pass State Park
- Report information findings to park law enforcement personnel in order to effect crime deterrence and prevention tactics
- Serve as a template to gage crime in other Washington State Parks

Deception Pass State Park Background Information

- 4,134 acres of marine and camping park with 77,000 feet of saltwater shoreline and 33,900 feet of freshwater shoreline on 3 lakes
- Located on the north tip of Whidbey Island and the south end of Fidalgo Island
- Park is connected by Deception Pass Bridge
- Over 2 million visitors a year
- Park includes several small islands only accessible by kayak or canoe
- 35 miles of trails throughout the park

Deception Pass State Park



Crime Data Collection Methods

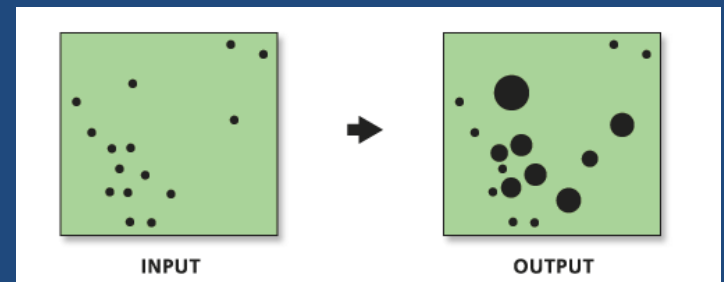
- No data collection tools exist for capturing crime incident data and location for state parks
- Gathered incident report forms from 1995-2003, transcribed incident description, location description, date, & time (when available)
- Incident data for 2004-2007 provided via Excel spreadsheet [date, time (when available), incident description, location coded]
- Parks Commission only has to hold crime incident data for 6 years

Analysis Methods

- Utilized 2006 NAIP 18in. aerial imagery, USGS 7.5' GeoPDFs, and Google Earth to determine lat/long locations for incidents from each description
- Broke down crimes into 8 categories for ease of analysis
 - Domestic Violence
 - Fire/Smoke/Fireworks
 - Malicious Mischief/Vandalism
 - Vehicle Prowl
 - Drugs/Alcohol
 - Firearms
 - Theft
 - Suicide/Suicidal
- Omitted parking violations, out of park responses, and speeding violations

Analysis Methods (Cont.)

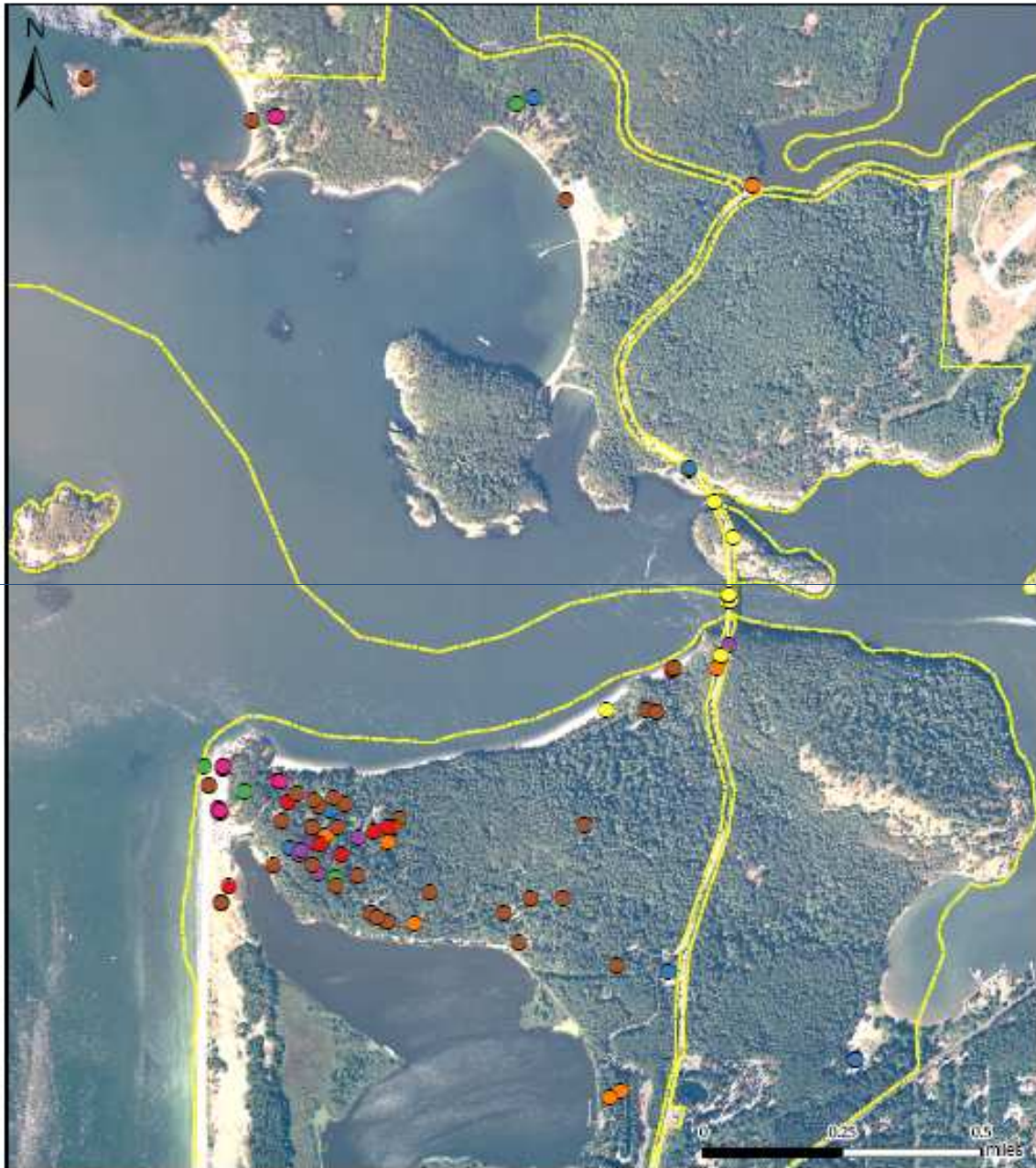
- Utilized Quantum GIS 0.9 OS software, GPS Tools plug-in to convert GPX files of trails to shapefiles for base map use
- Used ArcInfo's Spatial Analyst extension for dot density of crimes
- Used Spatial Statistics Tools to convert 2004-2007 data points to weighted point data for proper display in the map.



Collect Events Tool

Analysis Products

- Mapped crime data points for 1995-1999, 2000-2003, & 2004-2007
- Used Spatial Analyst to determine locations with the highest density of crime
- Analyzed data by day of the week crime occurred
- Analyzed data by time of year (peak season vs. low season) crimes occurred



Deception Pass State Park Crime Incidents 1995-1999

Crime Types

- Domestic Violence
- Drugs/Alcohol
- Fire/Smoke/Fireworks
- Firearms
- Malicious Mischief/Vandalism
- Suicide/Suicidal
- Theft
- Vehicle Prowl
- Park Boundary

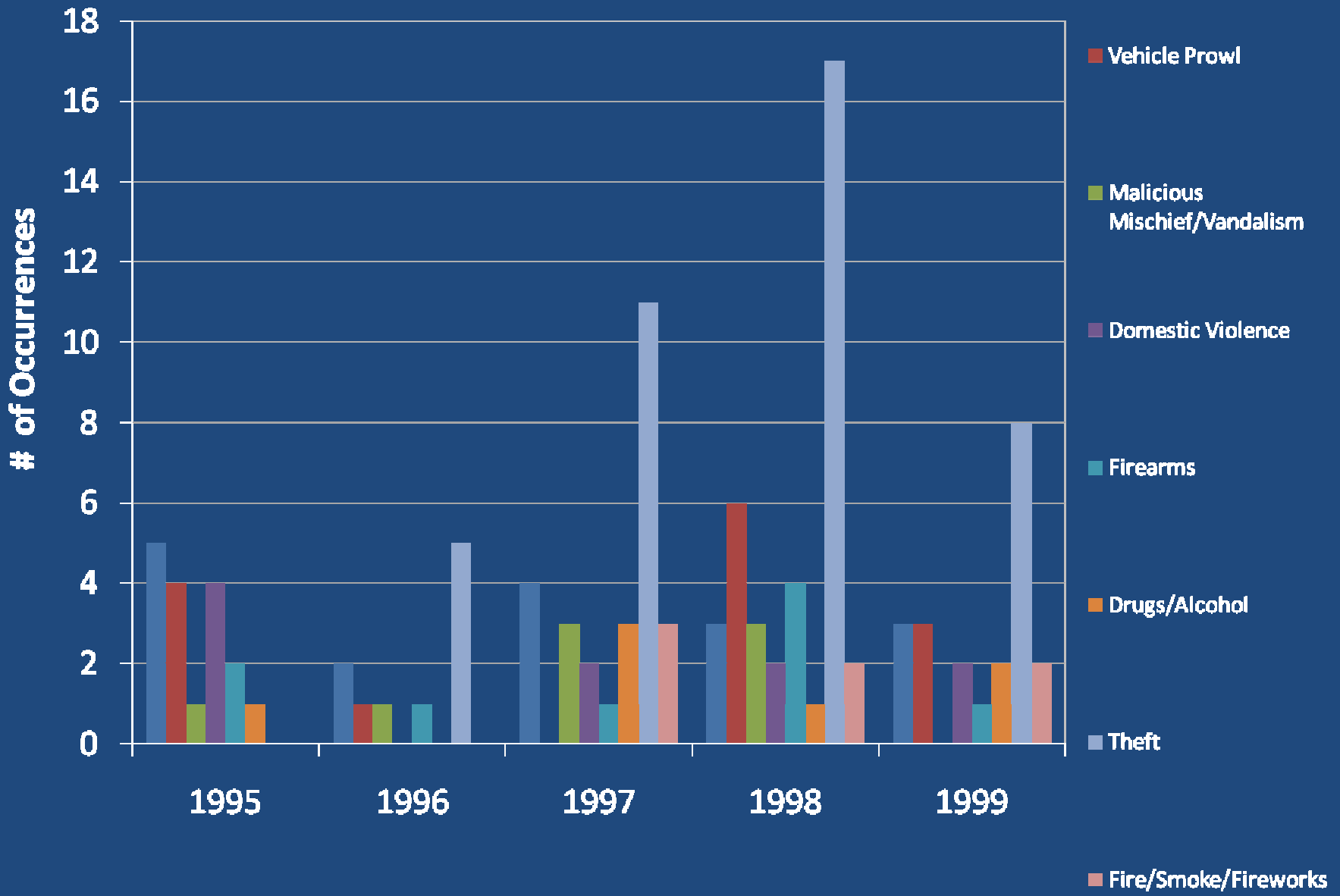
Cathy Walker, May 2008

Data Source: Washington State Parks & Recreation Commission

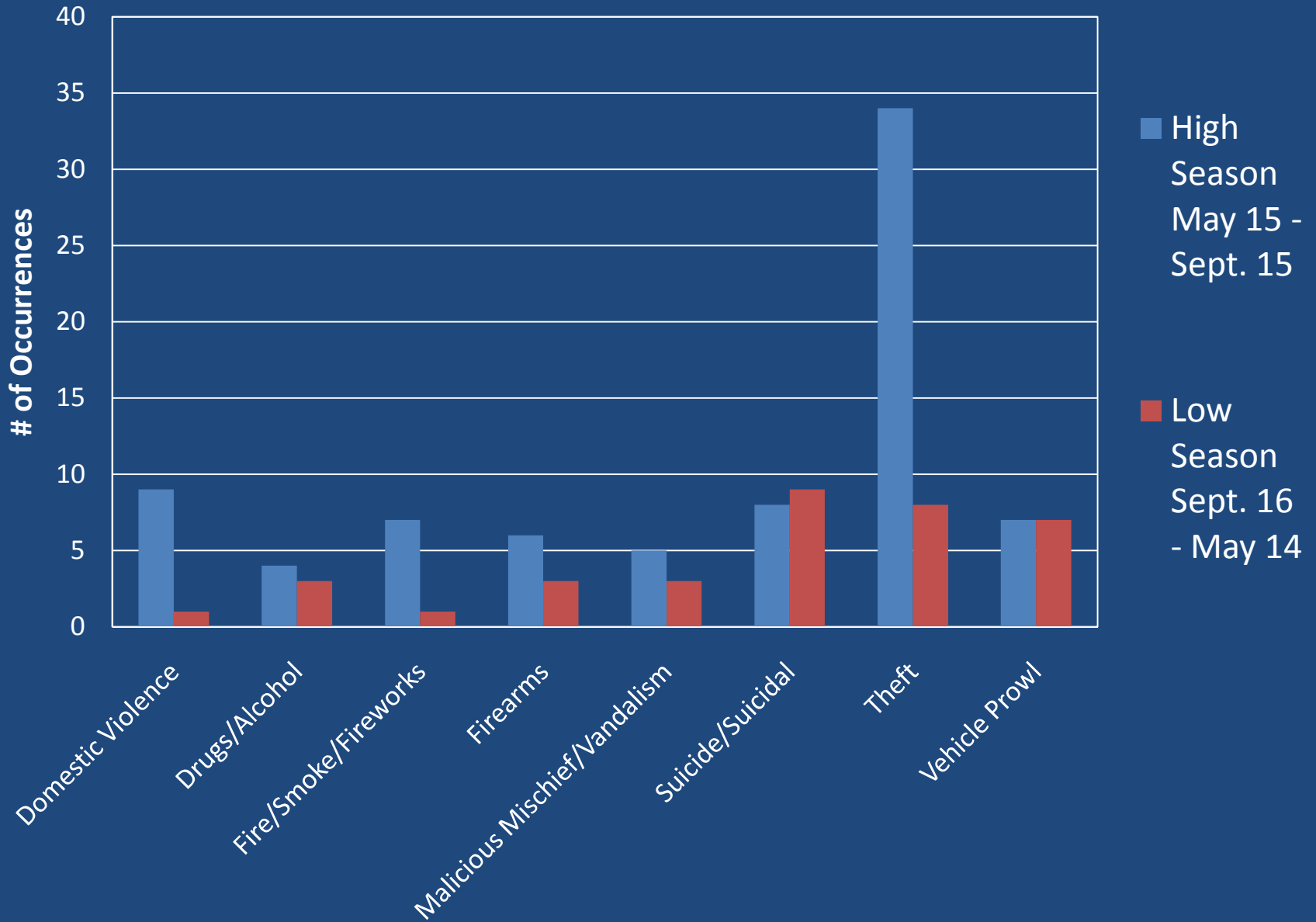
Projection: NAD 83 Washington State Plane South



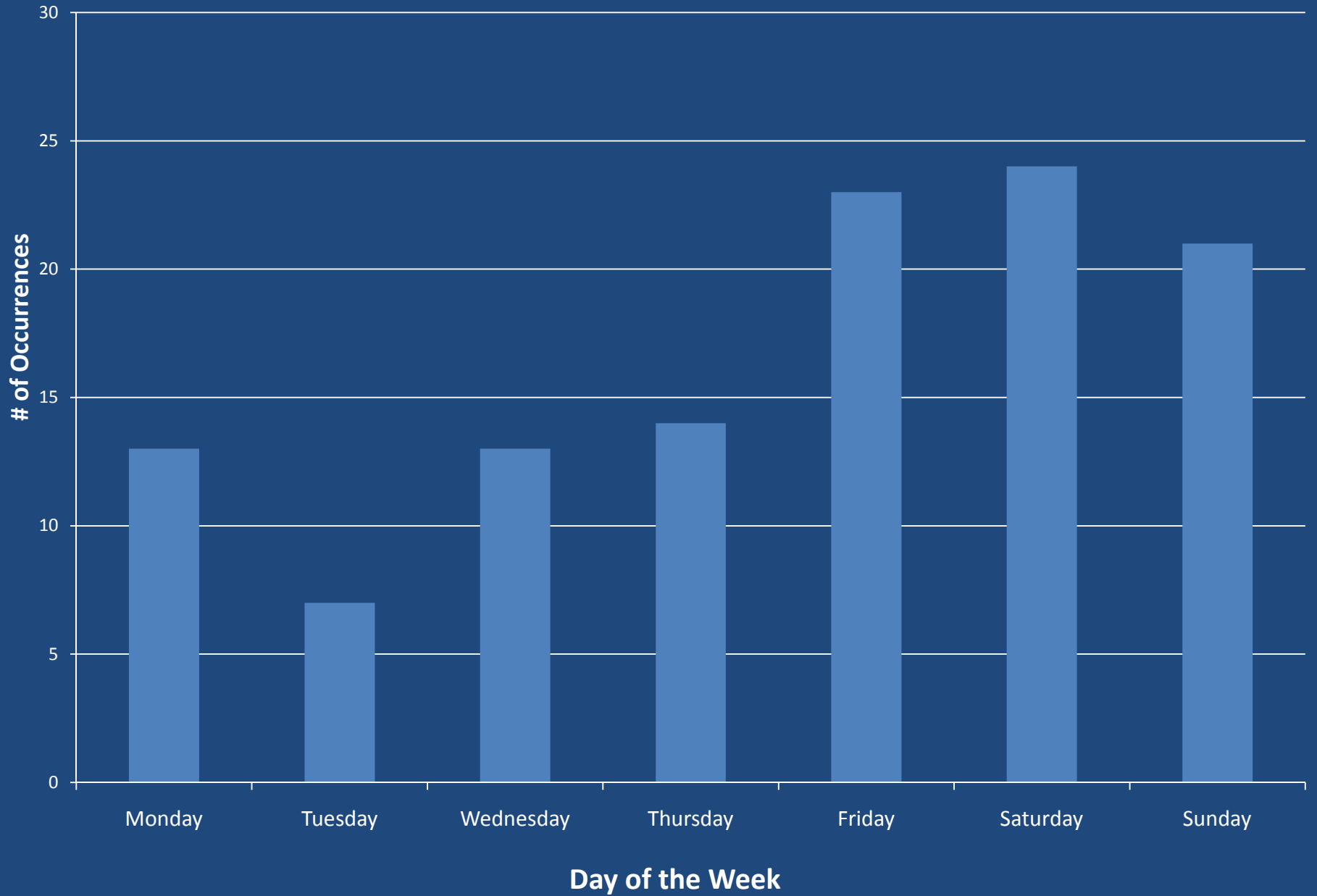
Deception Pass State Park Crime Incidents, 1995-1999



Crime Incidents for Deception Pass State Park, 1995-1999



1995-1999 Incidents



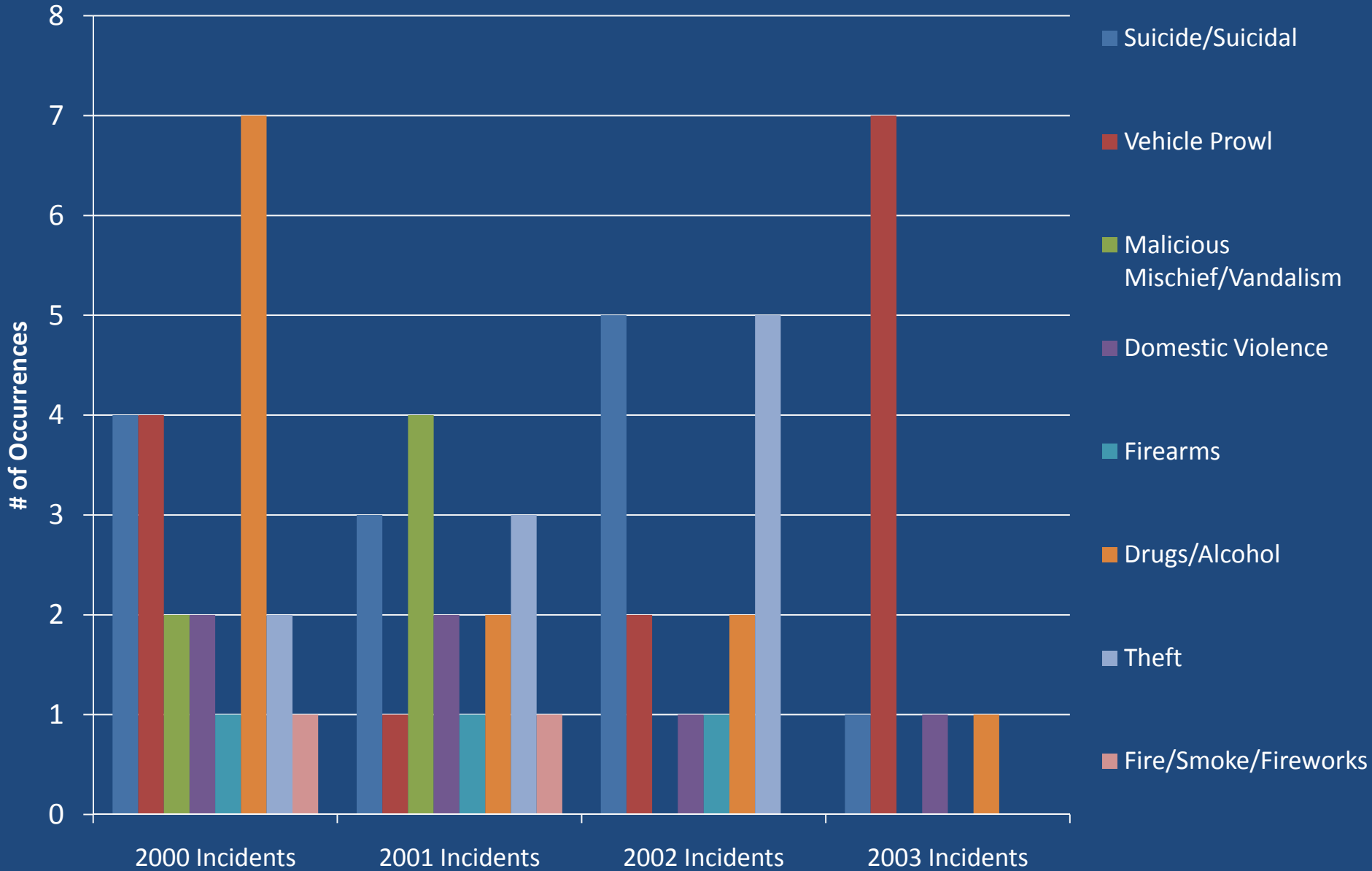
Deception Pass State Park Crime Incidents 2000 - 2003

Incident Types

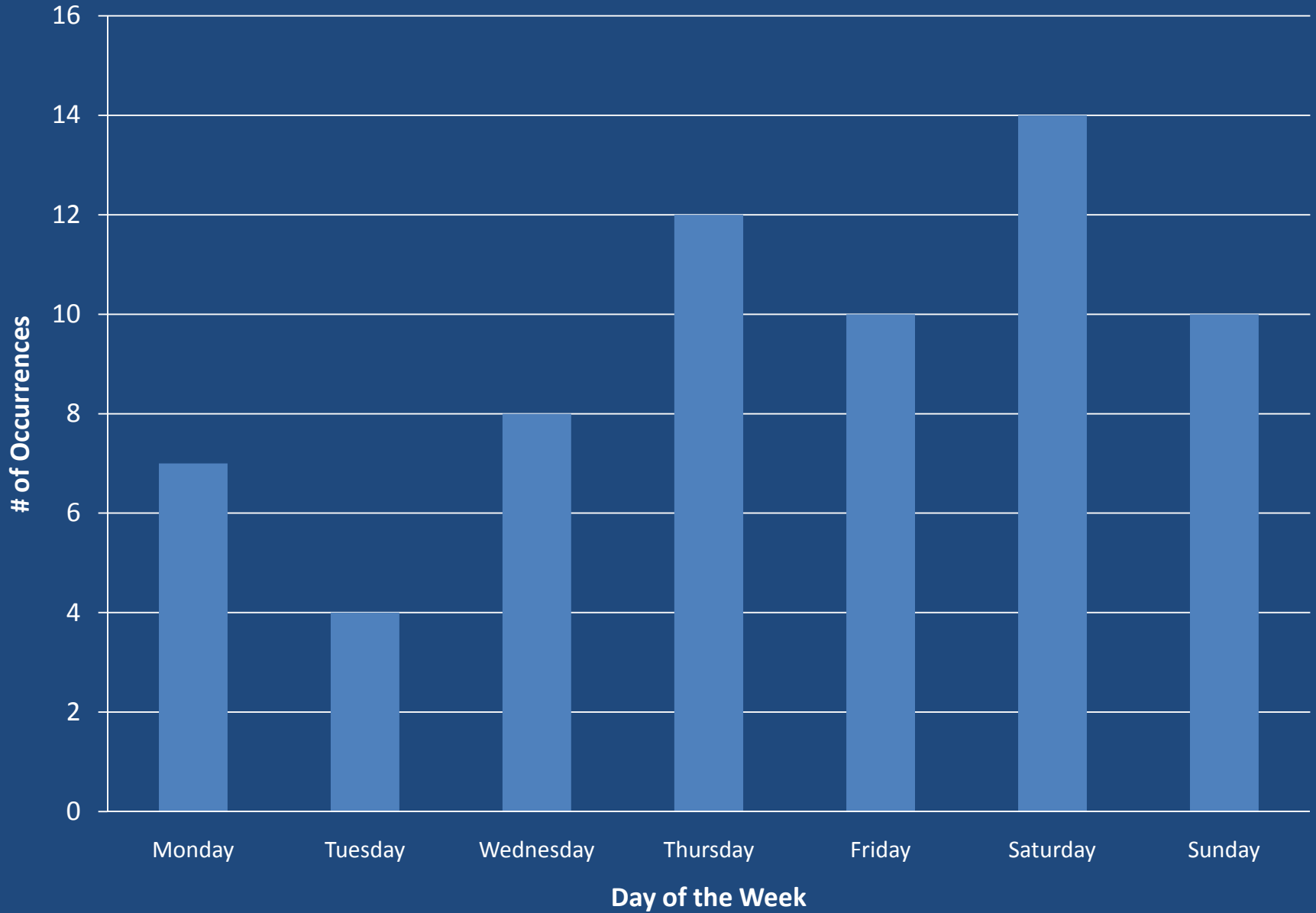
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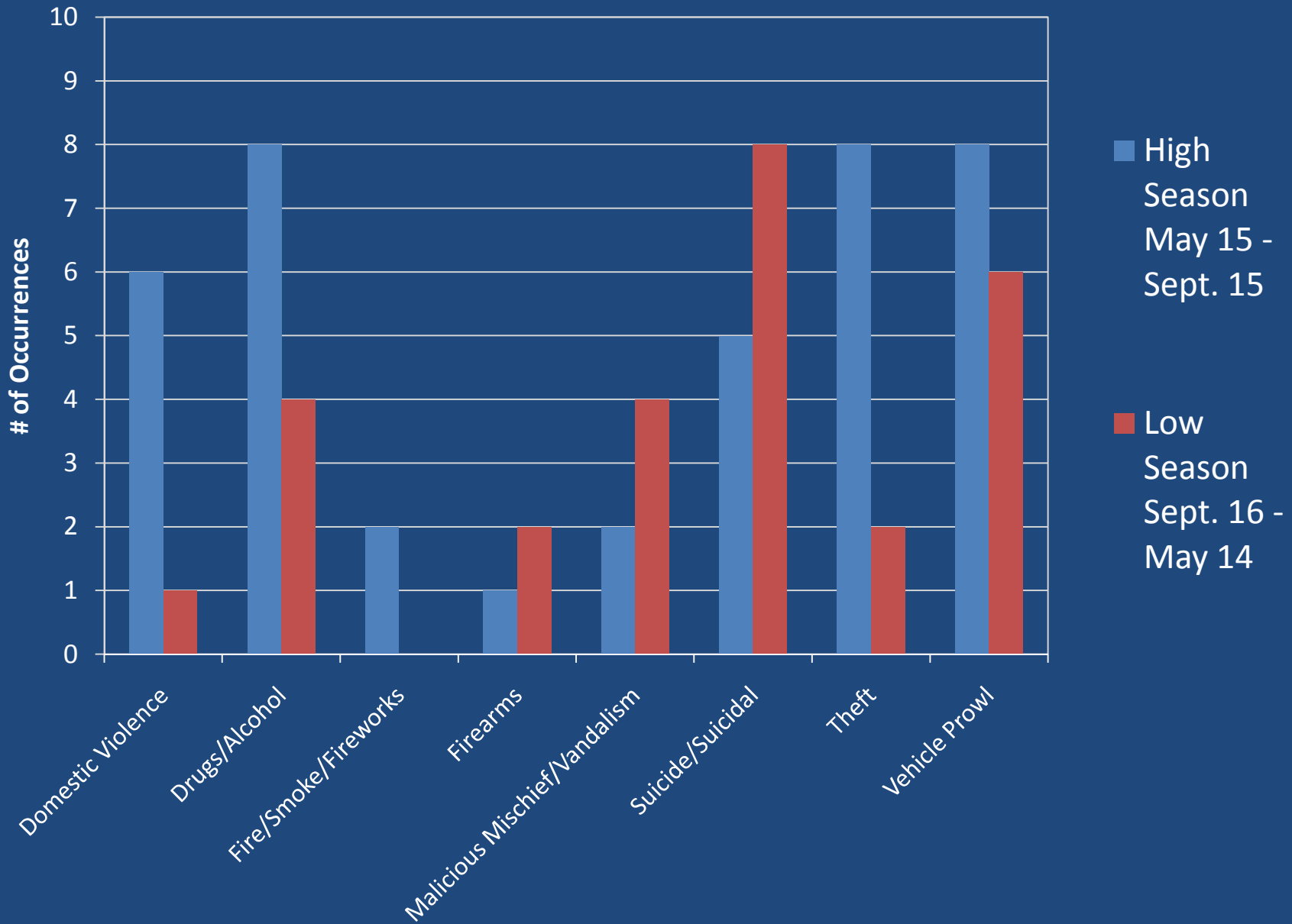
2000-2003 Incidents



2000-2003 Incidents



Crime Incidents for Deception Pass State Park, 2000-2003






Deception Pass State Park Crime Incidents 2004-2007

Number of Incidents

- 1 - 10
- 11 - 20
- 21 - 45

 Park Boundary

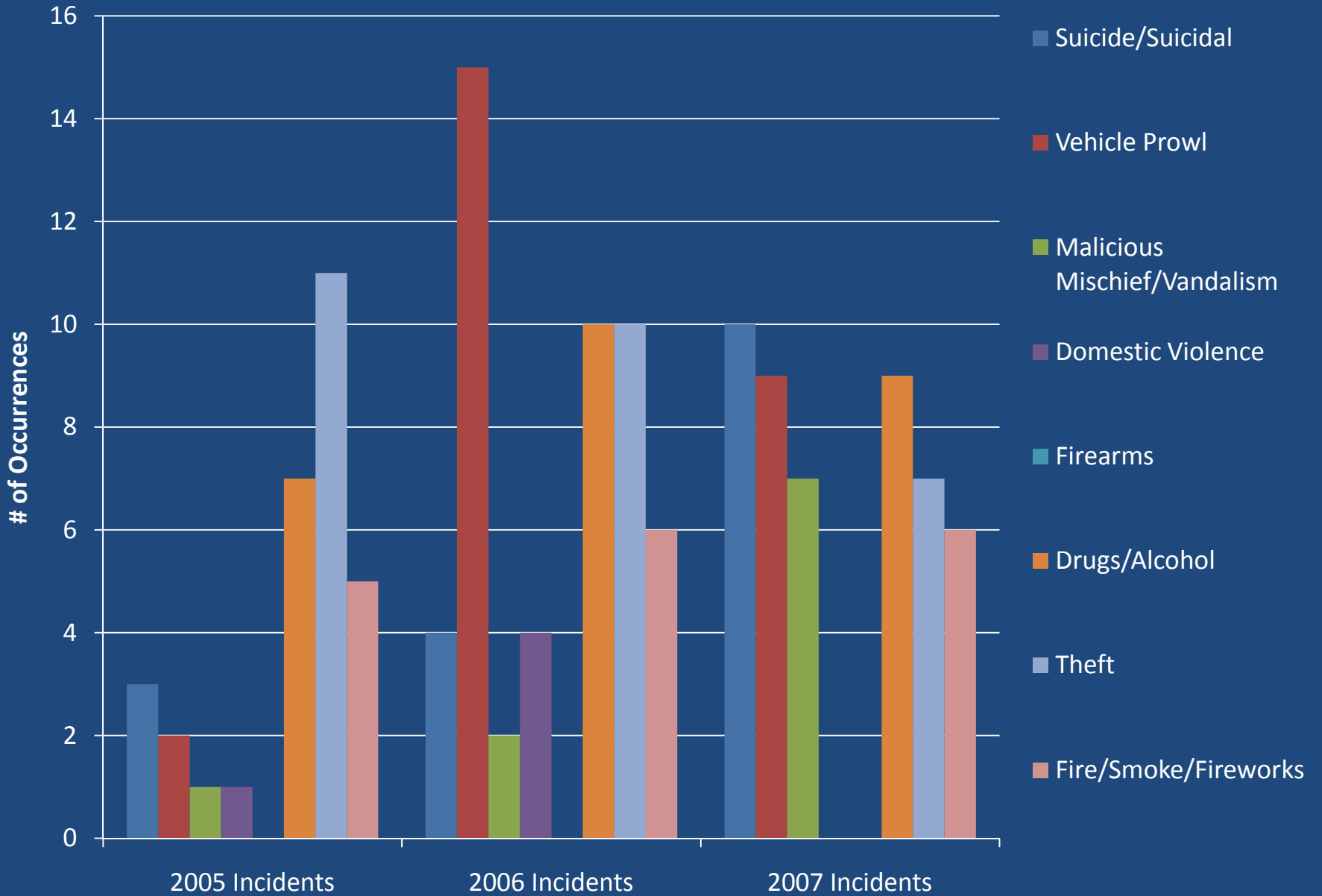
Incidents of crime in Deception Pass State Park between the years 2004 and 2007 were most concentrated at three areas in the park: the North Beach parking lot, the West Beach parking lot, and the campgrounds located near Cranberry Lake.

Cathy Walker, May 2008

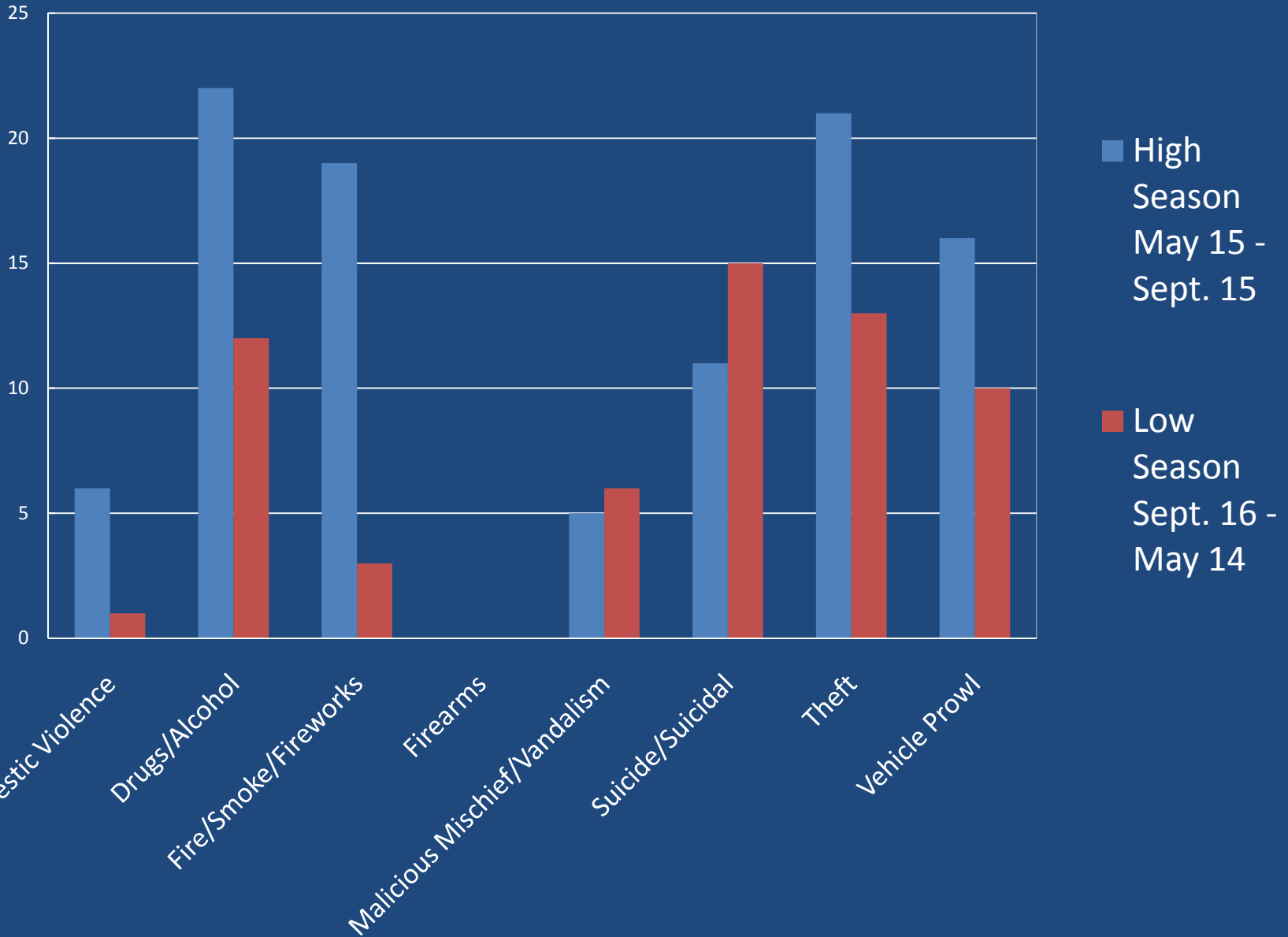
Data Source: Washington State Parks & Recreation Commission
Projection: NAD 83 Washington State Plane South



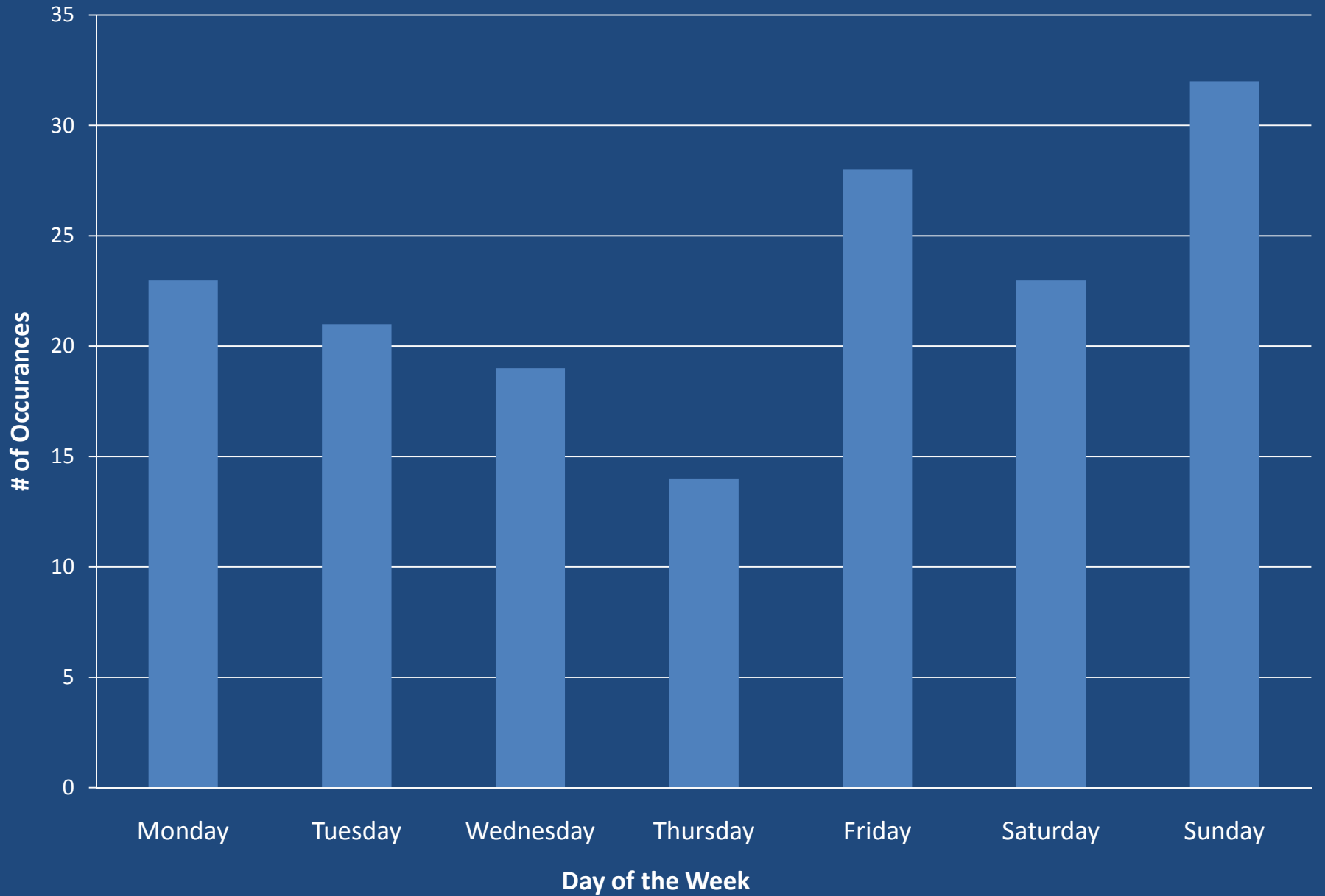
2004-2007 Incidents



Crime Incidents for Deception Pass State Park, 2004-2007



2004-2007 Incidents



Deception Pass State Park Crime Incidents 1995-1999

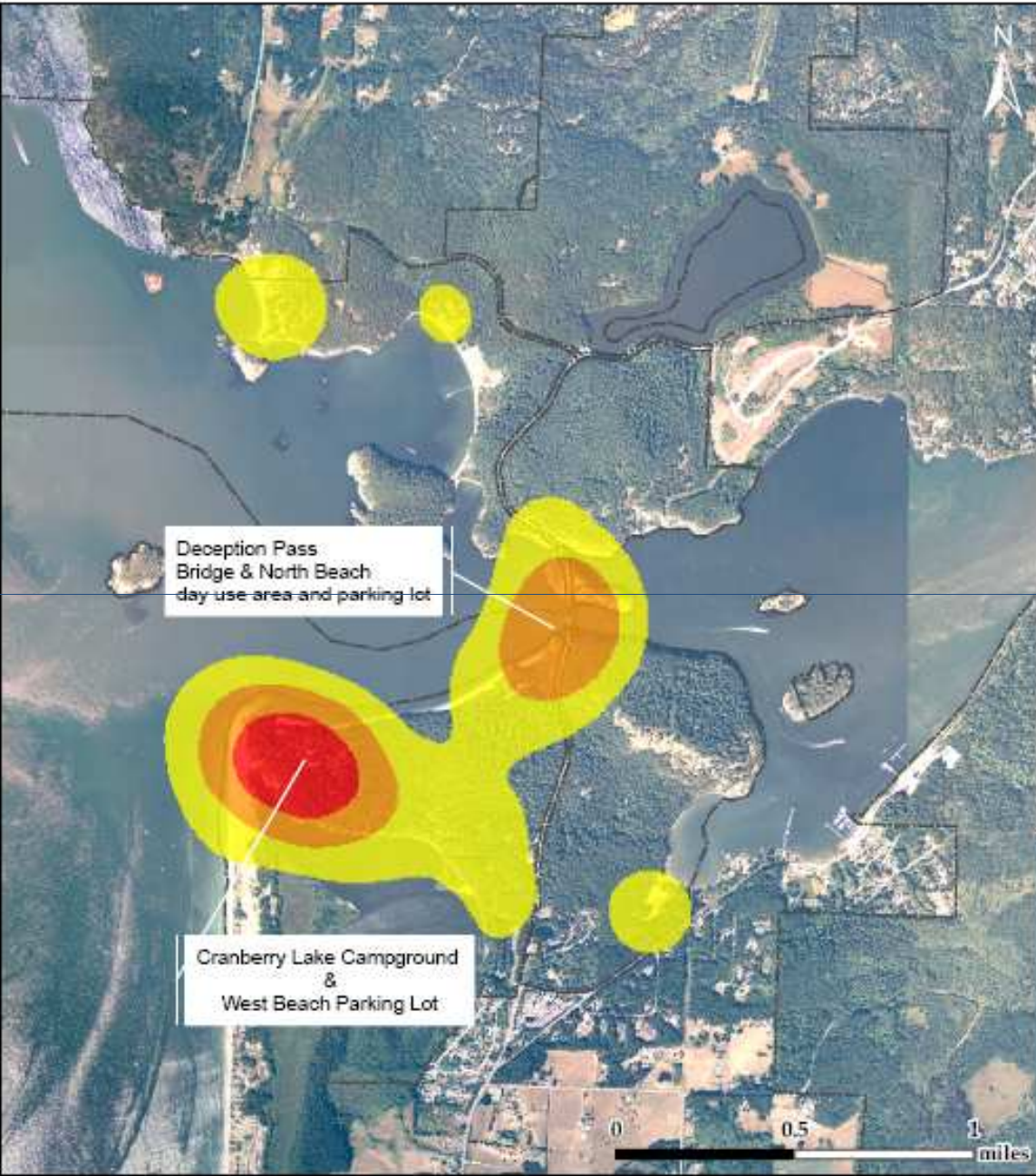
Density of Crime Incidents

-  Low
-  Medium
-  High

 Park Boundary

Density of crime incidents within Deception Pass State Park from 1995 to 1999 were greatest in the Cranberry Lake campground area, the West Beach parking lot, North Beach day use area and parking lot and around the Deception Pass Bridge.

Cathy Walker, May 2008
Data Source: Washington State Parks & Recreation Commission
Projection: NAD 83 Washington State Plane South



Deception Pass State Park Crime Incidents 2000 - 2003

Density of Crime Incidents

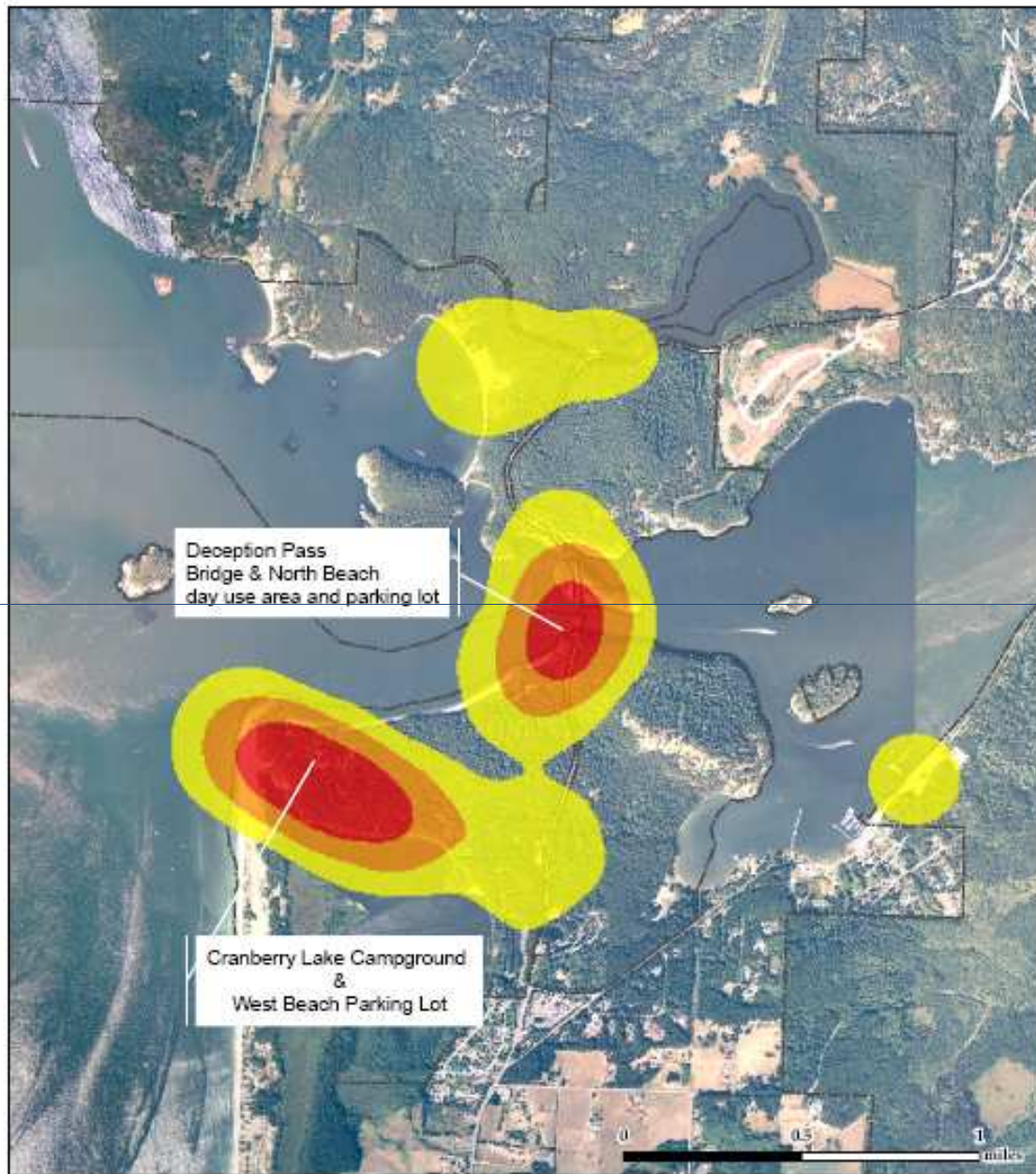


 Park Boundary

Density of crime incidents within Deception Pass State Park from 2000 to 2003 were greatest in the Cranberry Lake campground area, the West Beach parking lot, North Beach day use area and parking lot and around the Deception Pass Bridge.

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Deception Pass State Park Crime Incidents 2004 - 2007

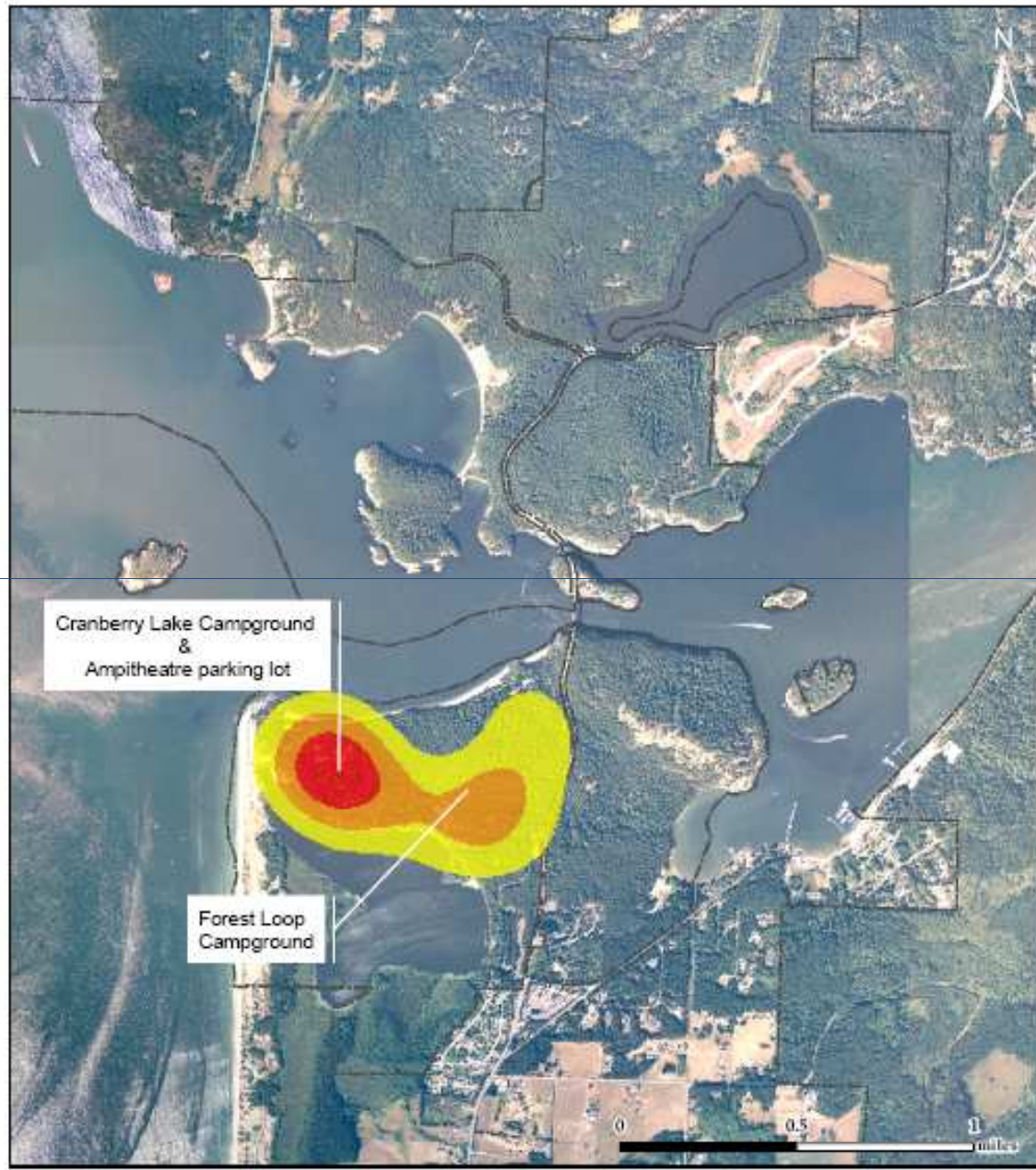
Density of Crime Incidents

-  Low
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 Park Boundary

Density of crime incidents within Deception Pass State Park from 2004 to 2007 were greatest in the Cranberry Lake Campground and Ampitheatre parking lot and Forest Loop Campground

Cathy Walker, May 2008
Data Source: Washington State Parks & Recreation Commission
Projection: NAD 83 Washington State Plane South



Results

- Clear locations exist in the park that experience a higher instance of crime occurrences than other
- West Beach parking lot, Cranberry Lake Campground, North Beach day use and parking lot , and Deception Pass Bridge, Forest Loop Campground
- Crime mapping techniques can serve as a useful tool for understanding crime and helping to deter future crime in Washington's State Parks

Recommendations & Future Work...

- Data collection of crime incidents continue with addition of lat/long location
- Digitize crime incident data from form report method
- Look at patrol methods in the park, high vs. low season
- Staffing patterns within the park by law enforcement personnel
- Look at CPTED (Crime Prevention Through Environmental Design) methods to help deter crime in high density areas

Thanks To...

- Bill Overby, Chairman; Skagit Valley College Administration of Justice Department
- Jack Hartt, Park Manager-Deception Pass State Park; Washington State Parks & Recreation Commission
- Phil Shave, Chief; Visitor Protection & Law Enforcement; Washington State Parks & Recreation Commission

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