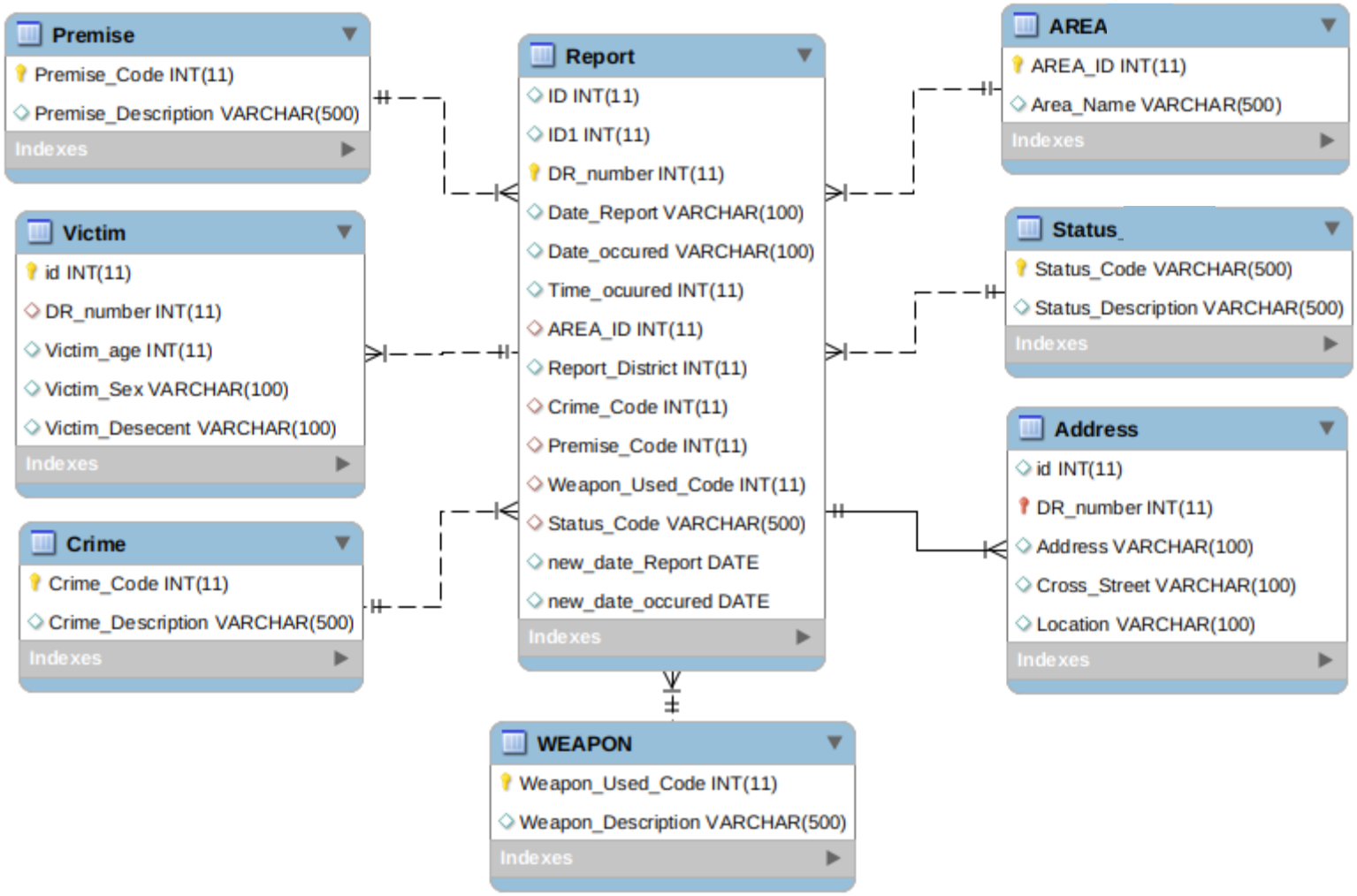
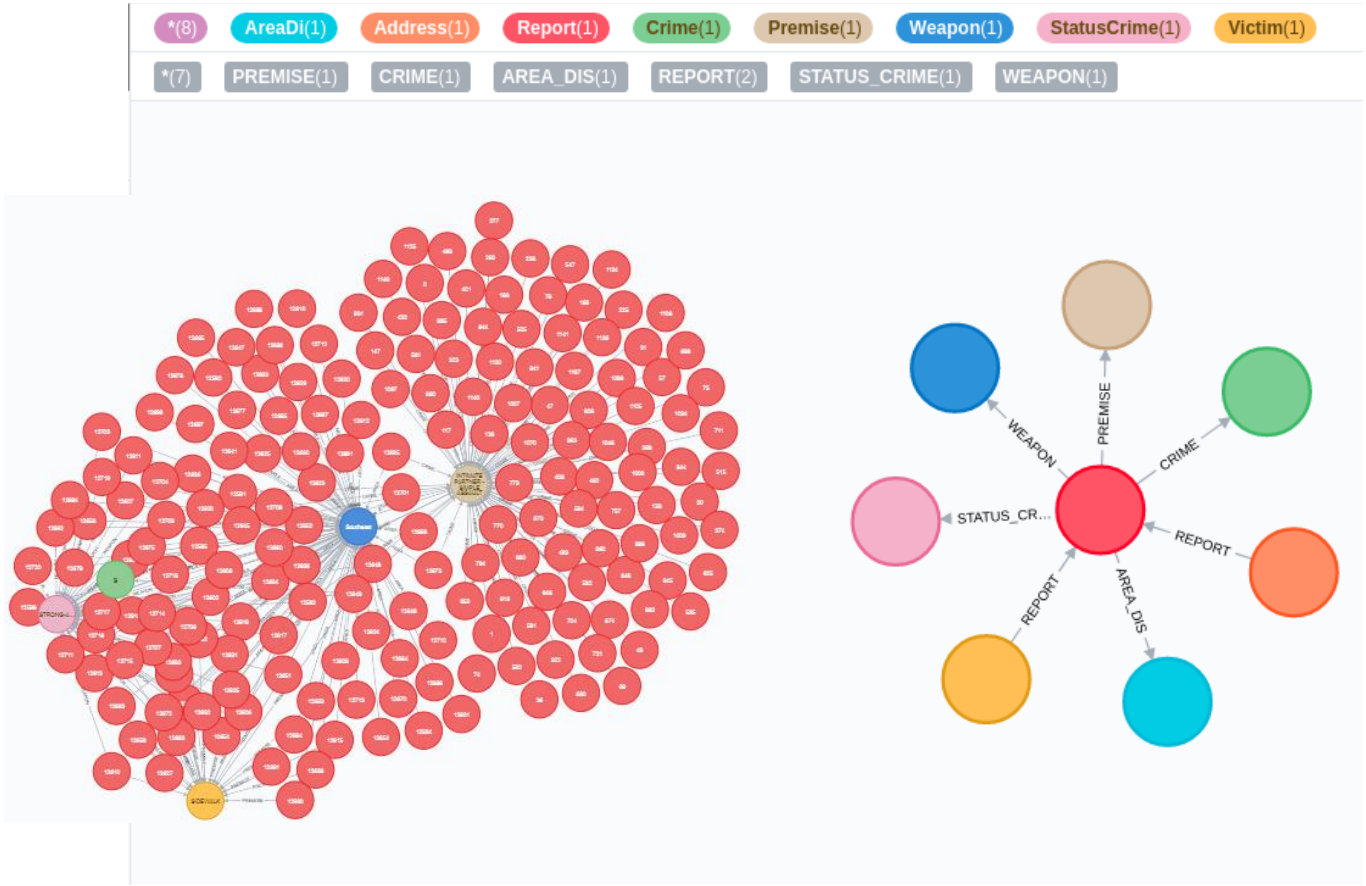
Diagram of Tables

Crime in Los Angeles(Crime data from 2010 through September 2017)



https://www.kaggle.com/cityofLA/crime-in-los-angeles

CALL db.schema.visualization()



Q1. Return the youngest male victims in each descent. Young men(less than 30 and more than 18 years old).

NEO4J Cypher Query

```
match (v:Victim)
where (v.victimAge>18 and v.victimAge<30) and
v.victimSex="M"
return v.victimDescent as victimdescent ,v.victimSex as
 victimsex,
count(v.victimAge) as anumber_of_young_victim
order by count (v.victimAge) desc

create index on :victim(victimage)
create index index_victage for (v:victim) on (v.victimage)
drop index index_victage
```

victimdescent	victimsex	anumber_of_young_victim
"H"	"M"	2248
"B"	"M"	664
"W"	"M"	465
"O"	"M"	166
"A"	"M"	45
"K"	"M"	8
"X"	"M"	4
"C"	"M"	2
"F"	"M"	2

My SQL Query

```
SELECT VictimDescent, VictimSex,count(VictimAge) as
 `numbers of young victim`
FROM victim FORCE INDEX (idx_age)
WHERE (VictimAge<30 AND VictimAge>18) AND VictimSex='M'GROUP BY
VictimDescent order by count(VictimAge) desc;
```

VictimDescent	VictimSex	numbers of young victim
H	M	2248
B	M	664
W	M	465
O	M	166
A	M	45
K	M	8
X	M	4
C	M	2
F	M	2
U	M	1

Q2: Finding the date that the most crime were reported.

datereported	number_of_crimes	crime_type
"2013-08-16"	22	"BATTERY - SIMPLE ASSAULT"
"2010-07-27"	19	"ROBBERY"
"2013-02-17"	18	"ROBBERY"
"2010-01-25"	18	"ROBBERY"

NEO4J Cypher Query

```
match (r:Report) -[Report]- > (c:Crime)
return r.newDate as datereported,count(r.newDate)as
number_of_crimes ,c.crimeCodeDescription as
crime_type
order by count(r.newDate)desc
```

My SQL Query

```
select new_date as datereported, count(new_date) as number of crimes,
crime.crimecodedescription as crime_type
from report inner join crime
on report.crimecode=crime.crimecode
group by new_date,crimecodedescription
order by count(datereported) desc;
```

2013-08-16	22	BATTERY - SIMPLE ASSAULT
2010-07-27	19	ROBBERY
2013-02-17	18	ROBBERY
2010-01-25	18	ROBBERY
2013-06-22	17	ASSAULT WITH DEADLY WEAPON, AGGRAVATE...

Q3: Return the number of crimes that happened in 2010 in West area.

NEO4J Cypher Query

```
match (r:Report) -[report]- > (a:Area)
Where r.newDate.year =2010 and toUpper(a.areaName) contains "WEST"
 return r.newDate.year as year,count(r.newDate.year)
 as number_of_crimes,a.areaName as areaname
order by count(r.newDate.year ) desc
```

year	number_of_crimes	areaname
2010	664	"Southwest"
2010	287	"West Valley"

My SQL Query

```
select datereported,count(year(new_date)),areaname
from report as r inner join area a on t.areaid=a.areaid
where a.areaname like '%west%' and year(new_date)=2010
group by year(new_date),areaname;
```

year	number_of_crimes	areaname
2010	664	Southwest
2010	287	West Valley

Q4: Return the number of reported crimes that their victim Descents are White ‘W’.

NEO4J Cypher Query

```
match (r:Report) -[report]- > (v: Victim)
Where v.victimDescent='W'
return r.newDate.year as year,count(r.newDate)
as number_of_crimes
order by count(r.newDate) desc
```

year	number_of_crimes
2013	1434
2010	1255
2011	9
2014	2

My SQL Query

```
select year(new_date) as year, count(year(new_date)) as number_of_crimes
 from report R
inner join victim V on R.drnumber=V.drnumber
where victimdescent='w’
group by year(new_date)
order by count(year(new_date)) desc;
```

year	number_of_crimes
2013	1434
2010	1255
2011	9
2014	2

Q5: Return dates and places that kidnapping occurred and the age of victim and weapons were used.

NEO4J Cypher Query

```
MATCH (node1)<-[:VICTIM]-(node2)-[:WEAPON]->(node3)
MATCH (node4)<-[:CRIME]-(node2)-[:PREMISE]->(node5)
WHERE toUpper(node4.crimeCodeDescription) CONTAINS "KIDNAPPING"
AND node1.victimAge IS NOT null
RETURN node2.newDate as Date,node1.victimAge as Age, node3.weaponDescription as Weapon,
node5.premiseDescription as place
order by Date
```

My SQL Query

```
select DateOccurred,VictimAge,WeaponDescription,PremiseDescription as 'the place that kidnapping
occured'from total_crime as T inner join crime as C on T.CrimeCode=C.CrimeCodeINNER JOIN
Premise as P ON  P.PremiseCode=T.PremiseCode INNER JOIN victim as V ON
T.DRNumber=V.DRNumberINNER JOIN weapon as W ON
T.WeaponUsedCode=W.WeaponUsedCodewhere c.CrimeCodeDescription like '%KIDNAPPING%'
order by DateOccurred ;
```

Date	Age	Weapon	place
"2010-01-01"	20	STRONG-ARM (HANDS, FIST, FEET OR BODILY FORCE)	STREET
"2010-01-11"	17	UNKNOWN WEAPON/OTHER WEAPON	STREET
"2010-01-12"	37	STRONG-ARM (HANDS, FIST, FEET OR BODILY FORCE)	STREET
"2010-01-20"	47	STRONG-ARM (HANDS, FIST, FEET OR BODILY FORCE)	STREET
"2010-01-28"	13	STRONG-ARM (HANDS, FIST, FEET OR BODILY FORCE)	STREET
"2010-01-29"	24	UNKNOWN WEAPON/OTHER WEAPON	STREET
"2010-01-29"	19	STRONG-ARM (HANDS, FIST, FEET OR BODILY FORCE)	VEHICLE, PASSENGER/TRUCK
"2010-01-30"	20	STRONG-ARM (HANDS, FIST, FEET OR BODILY FORCE)	STREET
"2010-02-03"	22	STRONG-ARM (HANDS, FIST, FEET OR BODILY FORCE)	PARKING LOT
"2010-02-06"	11	STRONG-ARM (HANDS, FIST, FEET OR BODILY FORCE)	STREET

new_date	VictimAge	WeaponDescription	the place that kidnapping occured
2010-01-01	20	STRONG-ARM (HANDS, FIST, FEET OR BODILY ...	STREET
2010-01-11	17	UNKNOWN WEAPON/OTHER WEAPON	STREET
2010-01-12	37	STRONG-ARM (HANDS, FIST, FEET OR BODILY ...	STREET
2010-01-20	47	STRONG-ARM (HANDS, FIST, FEET OR BODILY ...	STREET
2010-01-28	13	STRONG-ARM (HANDS, FIST, FEET OR BODILY ...	STREET
2010-01-29	19	STRONG-ARM (HANDS, FIST, FEET OR BODILY ...	VEHICLE, PASSENGER/TRUCK
2010-01-29	24	UNKNOWN WEAPON/OTHER WEAPON	STREET
2010-01-30	20	STRONG-ARM (HANDS, FIST, FEET OR BODILY ...	STREET
2010-02-03	22	STRONG-ARM (HANDS, FIST, FEET OR BODILY ...	PARKING LOT

Q6: crimes that offended in people less than 18 for years after 2014

NEO4J Cypher Query

```
MATCH (node1)<-[:VICTIM]-(node2)-[:CRIME]->(node3)
WHERE node1.victimAge <=18 AND date(node2.newDate).
year>=2014
RETURN DISTINCT date(node2.newDate).year as year
,node3.crimeCode as crimeCode
ORDER BY year
```

year	crimeCode
2014	812
2014	821
2015	812
2016	821

My SQL Query

```
select year(new_date) as year_report, crimecode
from report r
inner join victim v on r.drnumber = v.drnumber
where  victimage <18
group by year_report,crimecode
having min(year_report)>=2014
order by year(new_date), count(crimecode) desc;
```

Year_Report	CrimeCode
2014	812
2014	821
2015	812
2016	821

Q7: return the average age of victims, who are female or male but they are less than 18 for each year and show the type of weapon that used most for these crimes

NEO4J Cypher Query

```
MATCH (node1)<-[:VICTIM]-(node2)-[:WEAPON]->(node3)
WHERE (node1.victimAge <18 OR node1.victimSex ="F")
WITH date(node2.newDate).year as year,
node1.victimSex as victimSex,
avg(node1.victimAge) as average_age, count(node3.weaponUsedCode)as number_used_weapon,
node3.weaponDescription as weapon_discription
ORDER BY year,number_used_weapon desc
WITH year,
collect([victimSex,average_age,number_used_weapon,weapon_discription])[..2] as w unwind w as
Sex_avgAge_NumberUsed_weaponDiscription
RETURN year, Sex_avgAge_NumberUsed_weaponDiscription
```

My SQL Query

```
SET @ranking = 0,  @prev_val = NULL;
select *,
@ranking:= if (@prev_val=Year_Report, @ranking+1, 1) as ranking , @prev_val := Year_Report
from
(select year(R.new_date) as Year_Report, Avg(V.Victimage), V.VictimSex , count(W.WeaponUsedCode),
W.WeaponDescription
from Victim as V
inner join Report as R on V.DRnumber = R.Drnumber
inner join WEAPON as W on W.WeaponUsedCode = R.WeaponUsedCode
where (V.Victimage < 18 or  V.VictimSex = 'F')
group by Year_Report, V.VictimSex, W.WeaponUsedCode
order by Year_Report, count(W.WeaponDescription) desc) t
having ranking <= 2;
```

Q7: return the average age of victims, who are female or male but they are less than 18 for each year and show the type of weapon that used most for these crimes

Year_Report	Avg(V.Victimage)	VictimSex	count(W.WeaponUsedCode)	WeaponDescription
2010	30.7210	F	3254	STRONG-ARM (HANDS, FIST, FEET OR BODILY FORCE)
2010	14.9182	M	501	STRONG-ARM (HANDS, FIST, FEET OR BODILY FORCE)
2011	24.0000	F	43	STRONG-ARM (HANDS, FIST, FEET OR BODILY FORCE)
2011	15.0000	M	2	VERBAL THREAT
2012	18.6250	F	8	STRONG-ARM (HANDS, FIST, FEET OR BODILY FORCE)
2012	13.5000	M	2	STRONG-ARM (HANDS, FIST, FEET OR BODILY FORCE)
2013	31.2801	F	3128	STRONG-ARM (HANDS, FIST, FEET OR BODILY FORCE)
2013	14.5613	M	253	STRONG-ARM (HANDS, FIST, FEET OR BODILY FORCE)
2014	28.0000	F	2	STRONG-ARM (HANDS, FIST, FEET OR BODILY FORCE)
2014	32.0000	F	1	STICK
2015	10.5000	F	2	STRONG-ARM (HANDS, FIST, FEET OR BODILY FORCE)
2016	14.0000	M	1	UNKNOWN WEAPON/OTHER WEAPON
2017	22.0000	F	1	STRONG-ARM (HANDS, FIST, FEET OR BODILY FORCE)

Q7: return the average age of victims, who are female or male but they are less than 18 for each year and show the type of weapon that used most for these crimes

year	Sex_avgAge_NumberUsed_weaponDiscription
2010	[F,30.720958819913967,3254,STRONG-ARM (HANDS, FIST, FEET OR BODILY FORCE)]
2010	[M,14.918163672654691,501,STRONG-ARM (HANDS, FIST, FEET OR BODILY FORCE)]
2011	[F,23.999999999999993,43,STRONG-ARM (HANDS, FIST, FEET OR BODILY FORCE)]
2011	[M,15.0,2,VERBAL THREAT]
2012	[F,18.625,8,STRONG-ARM (HANDS, FIST, FEET OR BODILY FORCE)]
2012	[M,13.5,2,STRONG-ARM (HANDS, FIST, FEET OR BODILY FORCE)]
2013	[F,31.28005115089515,3128,STRONG-ARM (HANDS, FIST, FEET OR BODILY FORCE)]
2013	[M,14.561264822134383,253,STRONG-ARM (HANDS, FIST, FEET OR BODILY FORCE)]
2014	[F,28.0,2,STRONG-ARM (HANDS, FIST, FEET OR BODILY FORCE)]
2014	[F,32.0,1,STICK]
2015	[F,10.5,2,STRONG-ARM (HANDS, FIST, FEET OR BODILY FORCE)]
2016	[M,14.0,1,UNKNOWN WEAPON/OTHER WEAPON]
2017	[F,22.0,1,STRONG-ARM (HANDS, FIST, FEET OR BODILY FORCE)]

Q8: crimes that happen more than 500 times each year

NEO4J Cypher Query

```
MATCH (node1)<-[:CRIME]-(node2)
WITH date(node2.newDate).year as year,node1.crimeCodeDescription as
crimeDescription,count(*) as f
WHERE f>500
RETURN year,crimeDescription
ORDER BY year desc
```

2013	"ROBBERY"
2013	"ASSAULT WITH DEADLY WEAPON, AGGRAVATED ASSAULT"
2013	"BATTERY - SIMPLE ASSAULT"
2013	"INTIMATE PARTNER - SIMPLE ASSAULT"
2010	"ROBBERY"
2010	"ASSAULT WITH DEADLY WEAPON, AGGRAVATED ASSAULT"
2010	"BATTERY - SIMPLE ASSAULT"
2010	"INTIMATE PARTNER - SIMPLE ASSAULT"

My SQL Query

```
select year(new_date), CrimeCodeDescription
from Crime C join Report R on C.CrimeCode = R.CrimeCode
group by year(R.new_date),CrimeCodeDescription
having count(C.CrimeCodeDescription)>500 ;
```

year(new_date)	CrimeCodeDescription
2013	ROBBERY
2010	ROBBERY
2013	ASSAULT WITH DEADLY WEAPON, AGGRAVATE...
2010	ASSAULT WITH DEADLY WEAPON, AGGRAVATE...
2013	BATTERY - SIMPLE ASSAULT
2010	BATTERY - SIMPLE ASSAULT
2013	INTIMATE PARTNER - SIMPLE ASSAULT
2010	INTIMATE PARTNER - SIMPLE ASSAULT

Q9: return race of victims that be offended most in each area

NEO4J Cypher Query

```
MATCH (node1)<-[:VICTIM]-(node2)-[:AREA]->(node3)
WITH  node3.areaName as areaName,max(node1.victimDescent) as
max_victimDesecent
RETURN distinct areaName,max_victimDesecent
```

areaName	max_victimDesecent
Central	X
Rampart	X
Southwest	X
Hollenbeck	X
Harbor	X
Hollywood	X
Wilshire	X
West LA	X
Van Nuys	W
West Valley	X
Northeast	W
77th Street	X
Newton	W
Pacific	X
N Hollywood	X
Foothill	X
Devonshire	W
Southeast	X
Mission	W
Olympic	W
Topanga	X

My SQL Query

```
select AreaName, max(VictimDescent)
from area as A
join Report as R on A.AreaID = R.AreaID
inner join Victim as V on R.DRnumber = V.DRnumber
group by AreaName;
```

AreaName	max(VictimDescent)
Central	X
Rampart	X
Southwest	X
Hollenbeck	X
Harbor	X
Hollywood	X
Wilshire	X
West LA	X
Van Nuys	W
West Valley	X
Northeast	W
77th Street	X
Newton	W
Pacific	X
N Hollywood	X
Foothill	X
Devonshire	W
Southeast	X
Mission	W
Olympic	W
Topanga	X