**SELECT**

**SUM(F.FATAL\_MEASURE), h.year, h.month**

**FROM**

**collision\_fact F, hours H, accident A**

**WHERE**

**A.accident\_key = F.accident\_key AND**

**F.hour\_key = H.hour\_key AND A.environment like '%Snow'**

**group by**

**rollup(h.year, h.month)**

**SELECT**

**SUM(F.FATAL\_MEASURE), h.year, h.month, a.road\_surface**

**FROM**

**collision\_fact F, hours H, accident A**

**WHERE**

**A.accident\_key = F.accident\_key AND**

**F.hour\_key = H.hour\_key AND H.hour\_start > 10**

**group by**

**rollup(h.year, h.month, a.road\_surface)**

***1. Drill down, roll up:***

For instance, determine the total number of fatalities in Ottawa During the four years.

**SELECT**

**SUM(F.FATAL\_MEASURE)**

**FROM**

**collision\_fact F, hours H**

**WHERE**

**F.hour\_key = H.hour\_key**

For instance, determine the total number of fatalities in Ottawa during 2015.

**SELECT**

**SUM(F.FATAL\_MEASURE)**

**FROM**

**collision\_fact F, hours H**

**WHERE**

**F.hour\_key = H.hour\_key AND H.year = 2015**

For instance, determine the total number of fatalities during an ice storm in Ottawa during 2014.

**SELECT**

**SUM(F.FATAL\_MEASURE)**

**FROM**

**collision\_fact F, hours H, accident A**

**WHERE**

**F.hour\_key = H.hour\_key AND H.year = 2014 AND A.accident\_key = F.accident\_key AND A.environment like '%Snow'**

For instance, determine the total number of fatalities during a snow storm in Ottawa during December 2014.

**SELECT**

**SUM(F.FATAL\_MEASURE)**

**FROM**

**collision\_fact F, hours H, accident A**

**WHERE**

**F.hour\_key = H.hour\_key AND A.accident\_key = F.accident\_key AND**

**H.year = 2014 AND H.month = '12' AND A.environment like '%Snow'**

For instance, determine the total number of fatalities during a snow storm in Downtown Ottawa during 2014.

**SELECT**

**SUM(F.FATAL\_MEASURE)**

**FROM**

**collision\_fact F, hours H, accident A , locations L**

**WHERE**

**F.hour\_key = H.hour\_key AND L.location\_key = F.location\_key AND A.accident\_key = F.accident\_key AND H.year = 2014 AND H.month = '12' AND A.environment like '%Snow' AND L.neighbourhood = 'centertown'**

***2. Drill down, roll up, slice and dice***

For instance, compare the number of accidents on Mondays, versus the number of accidents on Fridays.

**select**

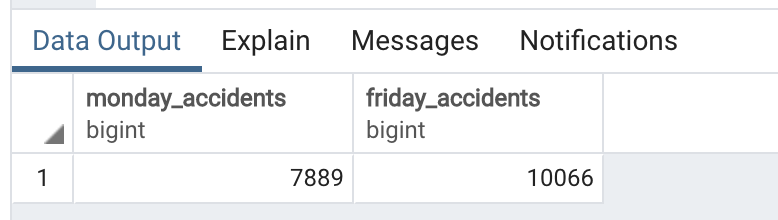
**count(\*) filter (where h\_dim.day\_of\_week = 'Monday') as Monday\_accidents,**

**count(\*) filter (where h\_dim.day\_of\_week = 'Friday') as Friday\_accidents**

**from collision\_fact cf, accident a\_dim, hours h\_dim**

**where cf.accident\_key = a\_dim.accident\_key**

**and cf.hour\_key = h\_dim.hour\_key;**



For instance, compare the number of fatal accidents on Mondays, versus the number of fatal accidents on Fridays.

**select**

**count(\*) filter (where h\_dim.day\_of\_week = 'Monday') as Monday\_fatals,**

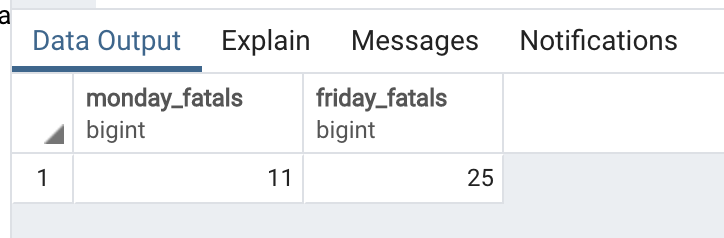
**count(\*) filter (where h\_dim.day\_of\_week = 'Friday') as Friday\_fatals**

**from collision\_fact cf, accident a\_dim, hours h\_dim**

**where cf.accident\_key = a\_dim.accident\_key**

**and cf.hour\_key = h\_dim.hour\_key**

**and cf.fatal\_measure = 1;**



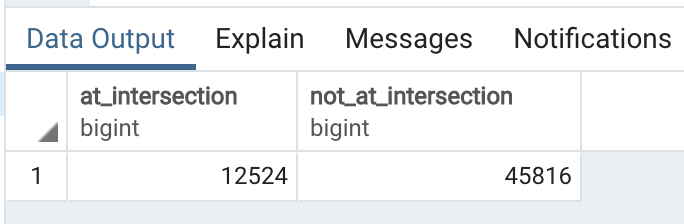
For instance, contrast the number of accidents at intersections, versus those that do not occur at intersections.

**select**

**count(\*) filter (where cf.intersection\_measure = 1) as at\_intersection,**

**count(\*) filter (where cf.intersection\_measure = 0) as not\_at\_intersection**

**from collision\_fact cf;**



For instance, contrast the number of fatal accidents at intersections versus those that do not occur at intersections.

**select**

**count(\*) filter (where cf.intersection\_measure = 1) as fatals\_at\_intersection,**

**count(\*) filter (where cf.intersection\_measure = 0) as fatals\_not\_at\_intersection**

**from collision\_fact cf**

**where cf.fatal\_measure = 1;**



***3. Explore the interplay between weather conditions and accidents, focussing on traffic control, intersection, impact type and visibility.***

For instance, contrast the total number of accidents during summer, with the number of fatalities during fall.

**select**

**count(\*) filter (where h.month = '6' OR h.month = '7' OR h.month = '8' OR h.month = '9') as summer,**

**count(\*) filter (where h.month = '10' OR h.month = '11' OR h.month = '12' AND cf.fatal\_measure = 1) as fall**

**from collision\_fact cf, hours h, accident a**

**where cf.hour\_key = h.hour\_key and cf.accident\_key = a.accident\_key**

For instance, determine the interplay between road surface and the number of accidents.

**select**

**a.road\_surface, count(\*) as number\_accident**

**from collision\_fact cf, accident a**

**where cf.accident\_key = a.accident\_key**

**group by a.road\_surface**

For instance, determine the interplay between strong rain showers and the number of accidents.

**select**

**w.conditions, count(\*) as number\_accident**

**from collision\_fact cf, weather\_dimension w**

**where cf.weatherkey = w.weatherkey and w.conditions like('%Heavy Rain%')**

**GROUP BY w.conditions**

For instance, contrast the number of accidents in Nepean during summer, with the number of fatalities in Orleans during winter.

**select**

**count(\*) filter (where h.month = '6' OR h.month = '7' OR h.month = '8' OR h.month = '9' and l.neighbourhood like ('%Orleans%')) AS summer,**

**count(\*) filter (where h.month = '10' OR h.month = '11' OR h.month = '12' AND cf.fatal\_measure = 1 and l.neighbourhood like 'Nepean%') as fall**

**from collision\_fact cf, hours h, accident a, locations l**

**where cf.hour\_key = h.hour\_key and cf.accident\_key = a.accident\_key**

***4. Locate “hot spots” for certain types of accidents, focussing on traffic control, intersection, impact type and visibility.***

For instance, determine the intersections with the most accidents over the four years

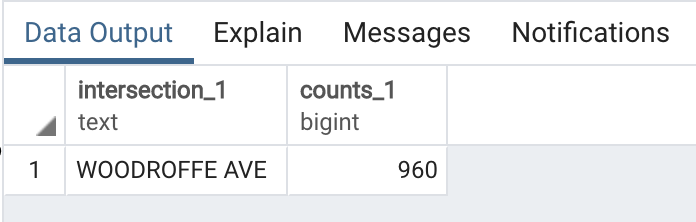
**select l\_dim.intersection\_1 as intersection\_1, count(\*) as counts\_1**

**from locations as l\_dim**

**group by intersection\_1**

**order by counts\_1 desc**

**limit 1;**



For instance, determine the neighbourhoods with the least accidents during evening rush hour.

**select l\_dim.neighbourhood as neighbourhood,**

**h\_dim.hour\_start,**

**h\_dim.hour\_end,**

**count(\*) as counts**

**from locations as l\_dim, collision\_fact as cf, hours as h\_dim**

**where**

**cf.location\_key = l\_dim.location\_key**

**and cf.hour\_key = h\_dim.hour\_key**

**and (h\_dim.hour\_start between 16 and 19)**

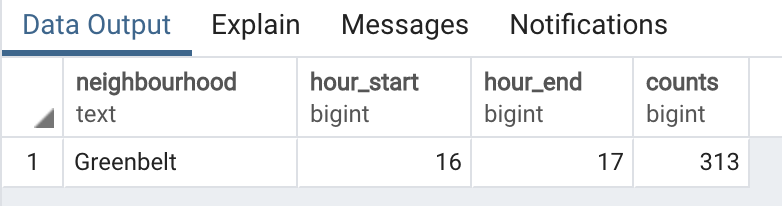
**and (h\_dim.hour\_end between 16 and 19)**

**group by neighbourhood, h\_dim.hour\_start,**

**h\_dim.hour\_end**

**order by counts**

**limit 1;**



For instance, determine the intersections with the least accidents in fall, during dusk.

**select l\_dim.intersection\_1 as intersection\_1,**

**h\_dim.hour\_start,**

**h\_dim.hour\_end,**

**h\_dim.month,**

**count(\*) as counts**

**from locations as l\_dim, collision\_fact as cf, hours as h\_dim**

**where**

**cf.location\_key = l\_dim.location\_key**

**and cf.hour\_key = h\_dim.hour\_key**

**and (h\_dim.hour\_start between 16 and 19)**

**and (h\_dim.hour\_end between 16 and 19)**

**and (h\_dim.month = 'September' or h\_dim.month = 'October' or h\_dim.month = 'November')**

**group by intersection\_1,h\_dim.hour\_start,**

**h\_dim.hour\_end,h\_dim.month**

**order by counts**

**limit 1;**

For instance, determine the sections of highways with the most accidents when visibility is poor.

**select l\_dim.street\_name, l\_dim.intersection\_1,l\_dim.intersection\_2,**

**w\_dim.visibilitykm, count(\*)**

**from collision\_fact as cf, locations as l\_dim, weather\_data as w\_dim**

**where cf.location\_key = l\_dim.location\_key**

**and cf.weatherkey = w\_dim.idkey**

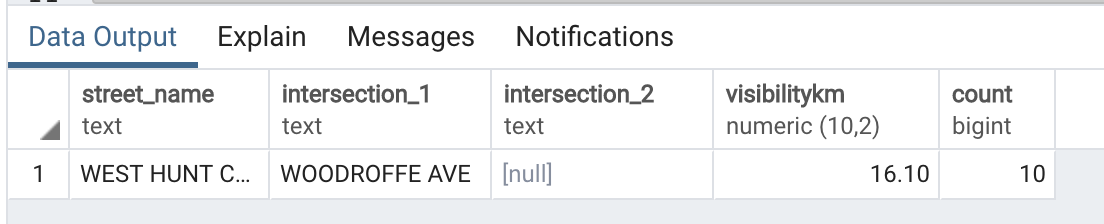
**and visibilitykm <20.00 -- assumed**

**group by (l\_dim.street\_name, l\_dim.intersection\_1,l\_dim.intersection\_2,**

**w\_dim.visibilitykm)**

**order by count desc**

**limit 1;**



***5. Calculate trends over the years.***

**SELECT**

**SUM(F.FATAL\_MEASURE) as NBR\_Accident**

**FROM**

**collision\_fact f, hours h, locations l**

**WHERE**

**l.neighbourhood like('Centertown') and f.location\_key = l.location\_key and h.hour\_key = f.hour\_key**

For instance, determine the monthly trends in adverse weather conditions over the four years.

**SELECT**

**h.year , h.month, w.conditions,**

**SUM(F.FATAL\_MEASURE) as NBR\_Accident**

**FROM**

**collision\_fact f, hours h, weather\_dimension w**

**WHERE**

**h.hour\_key = f.hour\_key and w.weatherkey=f.weatherkey**

**group by w.conditions, h.year, h.month**

**ORDER by h.year, h.month ASC**