

How Many Incidents Do Not Become Reported In Police Collision Data?

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1.0 Background

Since the fall of 2009 Gorski Consulting has been involved in a research project involving documentation of collision and loss-of-control incidents at an S-Curve of Clarke Road north of Fanshawe Park Road at the north-eastern outskirts of the City of London, Ontario, Canada. By the end of 2016 89 incidents were documented.

In the fall of 2016 Gorski Consulting made a Freedom of Information request to the City of London requesting details of the collision data they possessed for the segment of Clarke Road between Fanshawe Park Road and Sunningdale Road. That request was forwarded to the London City Police which provided their data.

The present article will review the police reported data and attempt to match it with the data gathered by Gorski Consulting.

2.0 Review of Gorski Consulting Research at the Clarke Road Site

Clarke Road between Fanshawe Park Road and Sunningdale Road in north-east London is an area surrounded by gravel pits and undeveloped land. A waste recycling yard is located within a kilometre north of the site. The result is that the road has been used by many large trucks, mostly dump trucks hauling gravel, sand and stone. The road has also been used as a bi-pass for drivers intending to travel from the busy Highway 401 expressway and industrial/commercial businesses in east London to areas north of the City. Finally, the road has increasingly become a short-cut used by residents of London as the inner arterials roads have become more congested.

An unusual S-curve exists at the Clarke Road site roughly halfway between Fanshawe Park Road to the south and Sunningdale Road to the north. A row of electric power towers runs along Clarke Road and the road changes its orientation such that it runs on the west side of the towers south of the curve and then changes to run on the east side of the towers, thus the cause of the curve. The road at this curve has generally maintained the original profile of the adjacent hilly land such that there are substantial changes in the vertical profile of the road at the curve. The posted maximum speed limit for this road segment was always 80 km/h.



Figure 1: View, looking south, of the S-Curve on Clarke Road on October 11, 2013.

The road surface was of very poor quality through much of the 10 year period before the research study. During testing in 2005 it was observed that a Speed Advisory sign of 70 km/h was posted for southbound travel. In approximately 2008 the road segment was repaved however the vertical profile of the road was never changed and a new Speed Advisory sign was erected reducing the advised speed at the curve to 60 km/h.

This resulted in a good road surface but challenging horizontal and vertical curves. Previous research has shown that such characteristics are not desirable. Allowing a good quality of road surface gives drivers the understanding that they can travel at a higher speed. Even though a Speed Advisory sign suggested a 60 km/h speed studies by Gorski Consulting in 2009 indicated that the average speed of vehicles passing through the curve in 2009 was over 80 km/h. When collisions are analysed police often place the blame on drivers when their speed is too high. Yet there is also a responsibility of the City to address the roadway features that cause speeds to be faster than the Advised or Maximum posted speed.

Because of the unusual character of the curve it was believed that it could be the site of a higher than average number of loss-of-control events. Thus it was a good candidate for study of loss-of-control collisions.

Gorski Consulting began official study of collision events at the S-curve of Clarke Road in the fall of 2009. A series of video documentations of the traffic was conducted whereby multiple cameras were set-up and synchronized so that their content could be analysed in video projects. Also, visits began to be made to the site every few days and photographs were taken of any evidence of collisions and loss-of-control events that could have led to collisions. As an example, loss-of-control tire marks were documented if a vehicle crossed through the opposing lane since the only reason a collision did not occur was because there was no opposing traffic present at that instant.

During the documentation of the collision evidence it became clear from the physical evidence that in many of the incidents, if a vehicle was still drivable, the driver simply exited the involved vehicle out of its rest position and left the site. The existence of a fresh deposit of damaged parts indicated that many of these events should have been reportable to police.

In recent years the Province of Ontario has increased the threshold requirements for the official reporting of motor vehicle collisions. Progressively, the requirement that police attend at a collision site has been scaled back. Also most "minor" collisions are only required to be reported to a collision reporting centre, thus no official and impartial entity actually attends a collision site to verify that the information reported by the drivers at the reporting centre is accurate. This places great faith in the belief that those at the reporting centre can accurately determine what kind of event occurred via examination of the vehicle damage and statements from the opposing drivers. Not only is this belief in the observational powers of reporting centres never objectively and independently tested, but the question remains as to how many collision events are never reported.

In Canada there has been an increase in the elderly population such that there are more elderly drivers and pedestrians. Thus there is also an increase in the frailty of this segment of the society. A collision event that might appear to be "minor" to a young and healthy person can be life-threatening to the elderly. Thus the meaning of what constitutes a minor collision and the reasoning for not documenting "minor" collisions become debatable issues. Thus there is a reason to examine how many of the so called "minor" collision events never become reported.

It has also been the experience of Gorski Consulting that many roadway problems never become documented so that a proper prioritization of those repairs and upgrades can be performed. The unfortunate system of civil litigation is such that those responsible for documenting the roadway problems are also those who must defend themselves in civil suits when a plaintiff stakes a claim. While police theoretically prepare an impartial report of a circumstance, many police forces also receive their funds from the very same pockets that they are required to find at fault. Thus while some repairs and improvements are made they are made based on a secret base of data that remains publicly unreported.

The presence of these problems and potential problems provides the impetus for this Gorski Consulting study.

Figure 2 shows the location of physical evidence of incidents documented by Gorski Consulting that occurred at the S-curve of Clarke Road between the fall of 2009 through to the end of 2012.

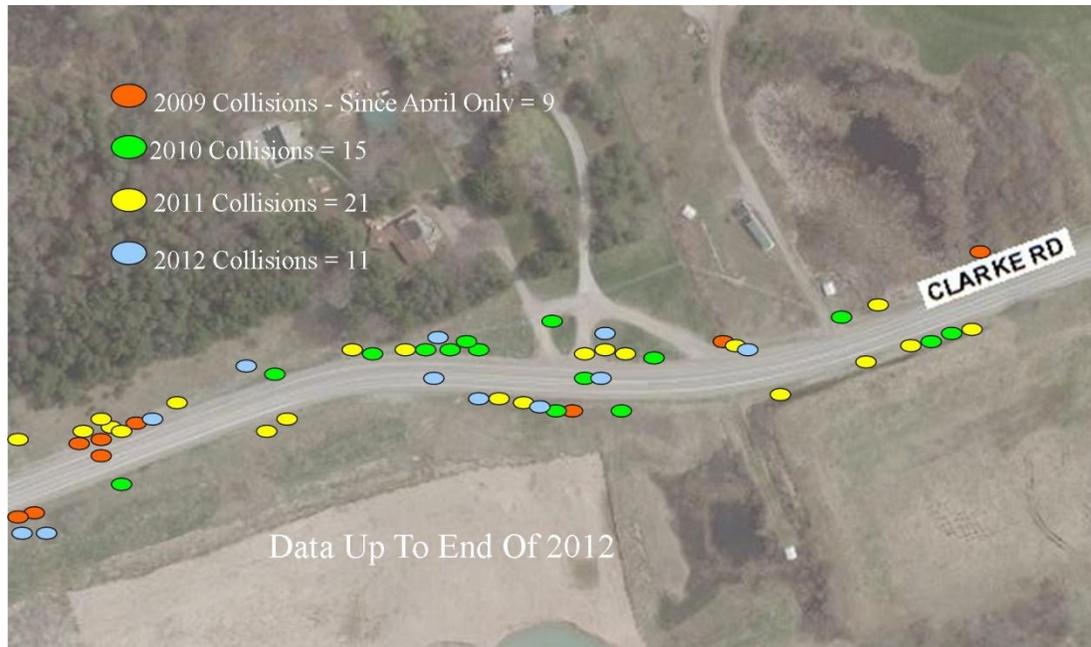


Figure 2: Location of collision events at Clarke Road S-curve, 2009 to 2012.

The vast majority of these incidents involved the loss-of-control of a single vehicle. When such an event occurs the physical evidence exists over a long stretch of roadway such that it becomes subjective as to where, within the curve, the physical evidence exists. At best this figure suggests that the physical evidence of vehicle loss-of-control appears to be random at this level of study and given the small number of observations. Thus after presenting the data shown in the above figure, the illustration of the incidents in this fashion was discontinued.

3.0 Comparison of the Gorski Consulting Data With the Collision Data from London City Police Service

In November of 2016 Gorski Consulting sent correspondence to the City of London requesting their collision data with respect to the Clarke Road site. Specifically, the following was requested for the period of October, 2009 through to October, 2016:

1. The date/time of each occurrence.
2. The collision severity (property damage only, personal injury, fatal).
3. The specific location of the occurrence within the roadway segment of Clarke Road north of Fanshawe Park Road and south of Sunningdale Road.
4. The general character of the collision (head-on, single vehicle loss-of-control, etc.).

5. The type of vehicle involved (passenger car, light truck, heavy truck, etc.)

In response, the City of London indicated it would be transferring the request to the London City Police. In their subsequent correspondence to the police the City representative indicated the following: "I am transferring this request to your office as I believe that your institution has greater interest in the requested records than the City of London". This was followed, early in January of 2017, with receipt of data from the London Police Service of the noted collision history. That data included the following for each year.

2009 – 1 one record of a collision

2010 – "No results for 2010"

2011 – 7 records

2012 – 8 records

2013 – 4 records

2014 – 7 records

2015 – 10 records

2016 – 4 records

There was no explanation provided as to why there were no records provided for the year 2010. In fact, there was no correspondence attached with the records.

In comparison, the following records of incidents were documented by Gorski Consulting at the S-curve for the noted years:

2009 – 9 records

2010 – 15 records

2011 – 21 records

2012 – 11 records

2013 – 10 records

2014 – 4 records

2015 – 9 records

2016 – 7 records

The results are enlightening. Clearly the Gorski Consulting database contains more incidents than the London Police database. The requested police records were to involve the full distance of Clarke Road from Fanshawe Park Road to Sunningdale Road. This road segment is approximately 1300 metres in length. Yet the data obtained by Gorski Consulting was for the smaller length of the S-curve itself which was only about 350 metres in length, or almost one quarter of the distance for which the London Police supplied their data. If the two datasets were not comparable it should have been because the police data included more samples, or more incidents, not the other way around. It is true that the Gorski Consulting database contained incidents that were not police reportable however it needs to be identified if that is the only reason for this difference. Thus the collision data from the year 2011 was selected to be examined more closely.

Figure 3 shows the London City Police collision data for the year 2011.

Collision Data From London Police Service Regarding Clarke Road North of Fanshawe Park Road

Year = 2011

Collision Date	Time	Severity	Location	General Character	Vehicle
11-Jun	0835	Property Damage	Travelling North	Loss of control	Pick-up truck
3-Jul	1510	Personal Injury	Travelling North	Loss of control	motorcycle
10-Aug	0515	Personal Injury	Travelling South in Curve	Impaired driving	passenger car
29-Aug	2005	Personal Injury	Travelling North in Curve	Loss of control	motorcycle
25-Oct	1350	Property Damage	Travelling South	Loss of control	passenger car
12-Dec	1528	Property Damage	Travelling South	deer struck	passenger van
28-Dec	0845	Property Damage	Travelling South	Loss of control	passenger car

Figure 3

Figure 4 shows the 2011 incident data documented by Gorski Consulting at the S-curve of Clarke Road.

The first comparison that can be made between the two datasets from 2011 is that the police indicate there were no reportable collisions on Clarke Road until June 11th whereas the Gorski Consulting dataset shows there were 9 incidents along the S-curve before that June 11th collision.

It needs to be clarified that the "Date" in the Gorski Consulting data does not refer to the date that the incident occurred. It relates to the date that Gorski Consulting attended the Clarke Road site and identified the evidence of that incident. Since Gorski Consulting did not attend the site every day of the year there could be several day's difference between the day of the occurrence and the day that Gorski Consulting observed the physical evidence of that incident.

	Date	Travel Direction	Location of Collision Evidence	Description of Collision Evidence	Estimate of Injury & If Reported
1	Jan 24-11	Northbound	East Roadside North of North Curve	Loss-of-control tire marks, no contacts	Likely no injuries and event not reported
2	Jan 25-11	Northbound	East Roadside North Edge of North Curve	Loss-of-control tire marks, no contacts	Likely no injuries and event not reported
3	Jan 31-11	Northbound	East Roadside At North Curve	Loss-of-control tire marks, no contacts	Likely no injuries and event not reported
4	Jan 31-11	Southbound	West Roadside South of South Curve	Loss-of-control tire marks, no contacts	Likely no injuries and event not reported
5	Feb 9-11	Northbound	East Roadside Between Two Curves	Loss-of-control tire marks, no contacts	Likely no injuries and event not reported
6	Feb 12-11	Southbound	East Roadside at South Curve	Loss-of-control tire marks, no contacts	Likely no injuries and event not reported
7	Feb 28-11	Southbound	West Roadside South of South Curve	Loss of control tire marks, rotation, impact with wire fence, no rollover	Likely no injuries and event not reported
8	Apr 8-11	Northbound	East Roadside at North Curve Followed by West Roadside North of North Curve	Loss of control tire marks, acceleration marks had impact with wire fence	Possible Injuries but event likely not reported
9	Jun 13-11	Northbound	East Roadside at North Curve; impacts with earth, trees and travel into golf course grounds	Loss of control tire marks, earth gouging, damage to trees	Possible Injuries but event likely not reported
10	Jul 18-11	Unknown	At North Curve	Debris from Unknown Collision	Unknown
11	Aug 8-11	Southbound	East Roadside Between Two Curves	Loss-of-control tire marks, no contacts	Likely no injuries and event not reported
12	Aug 10-11	Southbound	West Roadside Between Two Curves	Loss-of-Control tire marks, rotation, impact of wire fence	Possible Injuries but event likely not reported
13	Aug 10-11	Southbound	East Roadside Between Two Curves	Loss-of-control tire marks, no contacts	Likely no injuries and event not reported
14	Aug 30-11	Northbound	East Roadside at North Curve	Loss of control tire marks, earth impact	Likely no injuries and event not reported
15	Aug 30-11	Northbound	East Roadside North of North Curve	Loss-of-control tire marks, impact with earth embankment	Possible Injuries but event likely not reported
16	Oct 10-11	Southbound	West Roadside Between Two Curves	Loss-of-control Tiremarks with slide onto west shoulder	Likely no injuries and event not reported
17	Oct 16-11	Southbound	East Roadside Between Two Curves	Loss-of-control tire marks with impact through east fence and brush	Possible injuries and vehicle likely towed and collision reported
18	Nov 3-11	Southbound	West Roadside Between Two Curves	Loss-of-control tire marks with impact of west fence & Brush	Likely no injuries and event not reported
19	Nov 7-11	Southbound	East Shoulder Between Two Curves	Loss-of-control tire marks with no impact	Likely no injuries and event not reported
20	Dec 8-11	Southbound	West Roadside Between Two Curves	Loss-of-control tire marks on west roadside with no impact	Likely no injuries and event not reported
21	Dec 20-11	Northbound	East Roadside North of North Curve	Loss-of-control tire marks and impact with east earth embankment	Possible Injuries but event likely not reported

Figure 4: 2011 Incident Data Documented by Gorski Consulting

A review of the photographs on file indicates that Gorski Consulting visited the S-Curve on Clarke Road in 2011 as indicated below, summarized according to each month of the year:

January = 3 visits
February = 3 visits
March = 2 visits
April = 4 visits
May = 2 visits
June = 4 visits
July = 6 visits
August = 10 visits
September = 12 visits
October = 10 visits
November = 7 visits
December = 5 visits

The above indicates that Gorski Consulting did not attend the site very often in the first six months of the year. In fact, there were only 18 visits in those first six months, whereas there were 50 visits in the last six months. However that does not explain why 9 incidents were documented in those first six months yet the police data only mentions the single collision.

The actual photographs of the incident evidence were examined with the following results. The incidents on January 24 and 25, 2011 referred to tire marks on the roadside of vehicles that had slid off the road. As an example, Figure 5 shows a photograph of the physical evidence from January 25, 2011 where a vehicle slid into the east roadside and then backed out and drove away. This could not be expected to be a police-reportable incident. The incident on January 24, 2011 was similar.

The two incidents of January 31, 2011 were also similar where vehicles slid into the roadside and then drove away. However the northbound vehicle managed to make light contact with the west fence, as shown in Figure 6.

The incidents of February 9 and 12, were also similar to the others in that they involved vehicles sliding into the roadside. Given the extent to which they were jammed into the deep snow banks it was not clear that these vehicles just backed out and left but that some extra effort might have been required. Figure 7 shows the evidence from the Feb 12th incident.

The incident of February 28 however was slightly more substantial. As shown in Figure 8 a southbound vehicle slid into the west fence at the south portion of the S-curve and caused damage to the fence. Some minor parts of the vehicle could be seen next to the fence. Tire marks indicated how the vehicle then left the site. As we know from the police data this incident was never reported to police.



Figure 5: View of an incident on January 25, 2011 where a vehicle slid off the pavement, entered the east roadside, and then backed out and drove away.



Figure 6: View of incident from January 31, 2011 where a northbound vehicle slid against the west fence.



Figure 7: Incident from February 12, 2011 where a southbound vehicle slid into the deep snow of the roadside.



Figure 8: Incident of February 28, 2011 where a vehicle slid into the west fence causing damage to it.



Figure 9: Incident of February 28, 2011. Small parts of the striking vehicle were still located near the fence.



Figure 10: Incident of February 28, 2011. Tire marks indicated that the striking vehicle drove away after this impact.

The incident from April 8th becomes a little more interesting. Figures 11 through 25 show that a northbound vehicle entered the north portion of the curve, began to yaw into the east shoulder and then dropped down into the east ditch. The vehicle then accelerated out of the east ditch, travelled across the road, and collided with a fence in the west ditch. Acceleration marks on the west shoulder showed how the vehicle then exited the west ditch and fled the accident site. This collision did not become part of the police accident records because the vehicle fled the site. Physical evidence indicates there would have been damage to the vehicle's undercarriage and a substantial amount of scratching to the front and sides of the vehicle from the fence contact. Other damage included separation of the vehicle's exterior mirror. While not preventing the vehicle from being driven the damage costs to the vehicle would have been substantial.



Figure 11: View looking north at the north portion of the curve. It may be difficult to detect however, a yaw mark exists on the east shoulder and passes through the area of the white bag, then continues past the bag and into the east ditch.



Figure 12: Closer view of the yaw mark passing through the area of the white bag and proceeding into the east roadside.



Figure 13: View of yaw mark at the bottom left, travelling in an arc, into the east roadside



Figure 14: View looking south at one of the tire marks on the steep slope of the east roadside.



Figure 15: View of the plastic skirt front a wheel-well that was ripped off the vehicle as it travelled into the east ditch.



Figure 16: View some wooden posts lying in the east ditch. Evidence of the vehicle's passage can be observed by a fresh contact visible at the end of the post in the foreground.



Figure 17: Close-up view of the fresh contact made to the end of the wooden post in the east roadside.



Figure 18: View of the evidence that the vehicle accelerated out of the east ditch and entered back onto the pavement.



Figure 19: View of the tire mark evidence as the vehicle travels toward the pavement but then travels across the road and strikes the fence of the west ditch in the background.



Figure 20: View looking toward the west ditch where the vehicle impacted the fence in the background.



Figure 21: View showing that the vehicle crashed through the west fence.



Figure 22: View of the tire marks of the vehicle where it crashed through the west fence.



Figure 23: View looking east at the tire marks in the west ditch where the vehicle crashed through the fence.



Figure 24: An example of the vehicle parts left at the accident site.



Figure 25: View looking south at the acceleration marks on the west shoulder where the vehicle fled the collision site.

We can examine the police reported collision of June 11th to see if it matches the incident reported in the Gorski Consulting database of June 13th. The police record indicated that at approximately 0830 hours a northbound pick-up was involved in a “loss of control” collision resulting in property damage only. The location of the collision was simply coded as “travelling north” so that it could have happened anywhere within the 1300 metres between Fanshawe Park and Sunningdale Roads.

In comparison, the Gorski Consulting dataset also showed that physical evidence was located on June 13th of a northbound vehicle that travelled into the east roadside of the north curve, made contacts with the earth, and came to rest against an evergreen tree in the grounds of an adjacent golf course. However it can be noted that the police data never indicated that the collision occurred at the S-Curve. Figures 26 through 34 show some of the evidence documented by Gorski Consulting on the east roadside at the north portion of the S-curve.



Figure 26: Incident documented by Gorski Consulting on June 13, 2011. Tire marks can be seen on the east shoulder and in the east ditch of the north portion of the curve where a northbound vehicle travelled into the ditch.



Figure 27: Tire marks show that the northbound vehicle travelled through the tall grass of the ditch where it made ground contact in the background.



Figure 28: View looking north showing the location where the northbound vehicle made contact with the earth on the upslope of the east ditch.



Figure 29: View, looking south from the location where the northbound vehicle contacted the slope of the east ditch.



Figure 30: View, looking south at a second location of earth contact at border of the property of a golf course located north of the S-curve. The S-Curve can be seen in the distant background.



Figure 31: View looking south, on the grounds of the golf course showing a tire marks and the third contact with the earth as the vehicle continued its northbound travel.



Figure 32: View looking north on the grounds of the golf course where a fourth ground contact is visible in the background.



Figure 33: View looking north from the fourth ground contact. The vehicle finally came to rest against the small evergreen tree in the background.



Figure 34: View of ground contact and small amount of damage to the evergreen tree where the northbound vehicle finally came to rest.

Could this evidence documented by Gorski Consulting relate to the collision that occurred on the morning of June 11th? It would be difficult to say. However, at approximately 1025 hours of June 11th Gorski Consulting happened to be travelling northbound through the S-curve of Clarke Road or approximately one hour after the collision time reported in the police database. Figures 35, 36 and 37 show that three vehicles were observed stopped on the east shoulder just north of the S-curve. One of those vehicles was a London City Police cruiser, while the other two vehicles were pick-up trucks. There appeared to be minor front end damage to the small Ford pick-up shown in Figure 37. If this vehicle was not related to the collision that occurred about one hour previous then this would be a very large coincidence.

The relationship between the photographs taken by Gorski Consulting on June 11th and those taken on June 13th could not be made until the police dataset was made available. What this matching means is that the police data about the reported "Location" of the collisions is suspect. It is clear that the collision of June 11th occurred at the S-curve yet the police simply coded "travelling north". Yet at other records such as the collisions on August 10th and 29th the police dataset is coded as "Travelling south in the curve" and "Travelling north in the curve".



Figure 35: View, looking north, taken at approximately 0930 hours of June 11, 2011, showing some vehicles stopped on the east shoulder just north of the S-curve.



Figure 36: View looking south just north of the S-curve showing some vehicles stopped on the east shoulder.



Figure 37: View showing that there appears to be damage to the front end of the pick-up truck stopped behind the first one.

On July 3rd the police dataset indicated that the rider of a northbound motorcycle lost control of the bike resulting in a collision that caused a personal injury. Gorski Consulting did not examine the S-Curve until July 12th and no evidence of a collision was noted within the S-curve at that time. On the subsequent visit on July 18th however, motorcycle parts were found in the tall grass of the east roadside which would match the police information. Those parts are shown in Figure 38. Once again however the police “Location” of the collision was only coded as “Travelling north” without specifying that the collision occurred within the S-curve.

The Gorski Consulting dataset indicated that there was a loss-of-control event that occurred in the S-curve on August 8th and this was not noted in the police dataset. Figures 39 to 41 show the evidence that was documented. These figures show that a southbound vehicle passed through the north portion of the curve and subsequently went into a counter-clockwise rotation, passed through the northbound lane and slid onto the east grass roadside between the two portions of the curve. The only reason why a collision did not take place is because a northbound vehicle was not travelling in the lane at the time that the southbound vehicle slid through it. While this was not a reportable collision for police purposes it was an event that could easily have resulted in a serious collision.

We note in the police dataset that the next collision on Clarke Road occurred on August 10th. The police indicated that at 0515 hours an impaired driver was “Travelling southbound in the curve” when the collision occurred.



Figure 38: View of motorcycle parts found on the east roadside of the north portion of the S-curve on July 18th. This evidence would match the police information that a north motorcycle crashed on Clarke Road on July 3rd.



Figure 39: Incident from August 8th. This is a view looking south toward the east roadside between the two parts of the S-curve. Yaw marks from a southbound vehicle show its counter-clockwise rotation.



Figure 40: View of the yaw marks. The vehicle was sliding sideways, leading with its right at the approximate bottom of the photograph. As the vehicle continued its rotation it began sliding backwards as it entered the grass in the background.



Figure 41: The vehicle was sliding backwards as it came to rest on the grass in the background. The driver subsequently accelerated forward over top of the sliding marks and exited the area.

Looking at the Gorski Consulting dataset two incidents were documented for August 10th. Both incidents involved a southbound vehicle. Both incidents occurred in the short, straight, transition section of road between the two parts of the S-Curve. One incident involved a vehicle travelling out-of-control into the west roadside where there was an impact with the fence. The second incident involved a vehicle travelling out-of-control onto the east roadside without a collision. Figures 42 and 43 show the evidence of the vehicle travelling into the west roadside and striking the fence. Figures 44 and 45 show the evidence on the east roadside.

In fact the events on August 10th were more complicated and were not revealed by either of the two datasets. Two additional sets of tire marks were found on the east roadside just south of where the loss-of-control vehicle came to rest, as shown in Figures 46 and 47. It was not possible to determine if these tire marks might have been related to the other two events however access to the police investigation would have made the evaluation easier. At a minimum the evidence suggested that the two loss-of-control vehicles could have been involved in the same incident that caused both of them to go out of control.



Figure 42: One of two incidents from August 10th. Here tire marks from a southbound vehicle indicate a clockwise rotation as the vehicle impacts the wire fence.



Figure 43: View looking north at the damage to the wire fence on the west roadside. Vehicle parts are also shown on the grass.



Figure 44: In the second incident of August 10th a southbound vehicle slid sideways through the gravel driveways between the two portions of the S-curve and came to rest at the edge of the grass.



Figure 45: View of a tape measure spanning the tire marks of the vehicle that came to rest sideways on the east roadside. Determining the wheelbase of a vehicle like this can sometimes be helpful in estimating what kind of vehicle was involved.



Figure 46: View of tire marks on the east roadside from two additional vehicles.



Figure 47: When tire marks cross each other as shown in this view it is possible to look at their intersection to determine which tire mark was created first.

Next we examine a collision that reportedly occurred at 2005 hours on August 29th. This was described in the police dataset as a motorcycle that when went out of control “Travelling north in the curve” and resulted in a personal injury.

Looking at the Gorski Consulting dataset two events were documented on August 30th on the east roadside. One event occurred at the north portion of the curve while the second occurred north of the north curve. Figures 48 and 49 are views looking north and they showing the single tire mark of the motorcycle as it travels through the tall grass and brush and then comes to rest at the location shown in Figure 49.

However the physical evidence does not end with the motorcycle. There was also clear evidence that another vehicle, not a motorcycle, travelled into the east roadside north of the motorcycle’s rest position. Figures 50 through 55 show the physical evidence of that loss-of-control motion. This other event was not minor. The vehicle impacted an embankment at the edge of the roadside that was several feet tall and the vehicle was propelled into the air over that embankment. The vehicle remained on its wheels however and after making ground contact with its underside it came to rest near some small trees, as shown in Figure 54. Figure 55 shows the full extent of the vehicle’s travel as this view was taken from the vehicle’s rest position and we can see the north portion of the S-curve in the background. While the police data indicated that this incident involved a motorcycle, that would appear to be an understatement.



Figure 48: Evidence from the incident of August 30th. This is a view looking north at the single tire mark of a motorcycle travelling through the tall grass and brush of the east roadside at the north curve.



Figure 49: View of the likely rest position of the motorcycle in the tall brush of the east roadside.



Figure 50: View of the loss-of-control yaw marks of a vehicle that has rotated clockwise into the east roadside just north of the north portion of the S-curve.



Figure 51: View of the tire marks of the northbound vehicle as it rotates into the embankment of the east roadside.



Figure 52: As the tire marks end at the top of the embankment this indicates that the loss-of-control vehicle has become airborne as it travels further into the roadside.



Figure 53: View of the gouges into the earth and flattening of the grass and brush as the vehicle travels further into the east roadside.



Figure 54: View of additional tire marks as the vehicle continues further and comes to rest near the small trees in the background.



Figure 55: This is a reverse view, looking back toward the south, while positioned near the final rest position of the vehicle. Clearly the vehicle has travelled a long distance and far from the final rest position of the motorcycle.

Clearly another vehicle was involved and either this vehicle was somehow involved in the motorcycle collision or it was a separate collision that the police did not document.

The police dataset indicates that the next collision occurred on October 25, 2011. However the Gorski Consulting dataset indicates that two other incidents, on October 10th and 16th preceded that collision.

In the incident on October 10th, a southbound vehicle went out of control as it passed through the north portion of the S-curve. The vehicle travelled fully into the northbound lane while rotating clockwise and then returned onto its own side of the road where it slid sideways onto the west roadside. Photographs of the tire marks indicate that the vehicle then drove away. Figures 56, 57 and 58 show the evidence of this incident.

The incident on October 16th involved a southbound vehicle that produced yaw marks at the centerline between the two segments of the S-curve. The vehicle then slid into the east roadside where it struck down a fence, a small tree and a telephone junction box before coming to rest in a field. There was evidence that the telephone junction box was repaired therefore official notice of the incident should have been passed onto the police. Thus it is not readily explainable why police would not have a record of the incident. Figures 59 through 62 provide views of the physical evidence of this incident.



Figure 56: Incident of October 10, 2011. This is a southward view of the northbound lane of Clarke road between the two segments of the S-curve. Yaw marks from a southbound vehicle can be seen near the centre-line in the background.



Figure 57: Closer view of the yaw marks from the southbound vehicle as it rotates clockwise toward the west shoulder.



Figure 58: View of the tire mark evidence as the vehicle came to rest on the west shoulder. Evidence indicates that the vehicle then drove away.

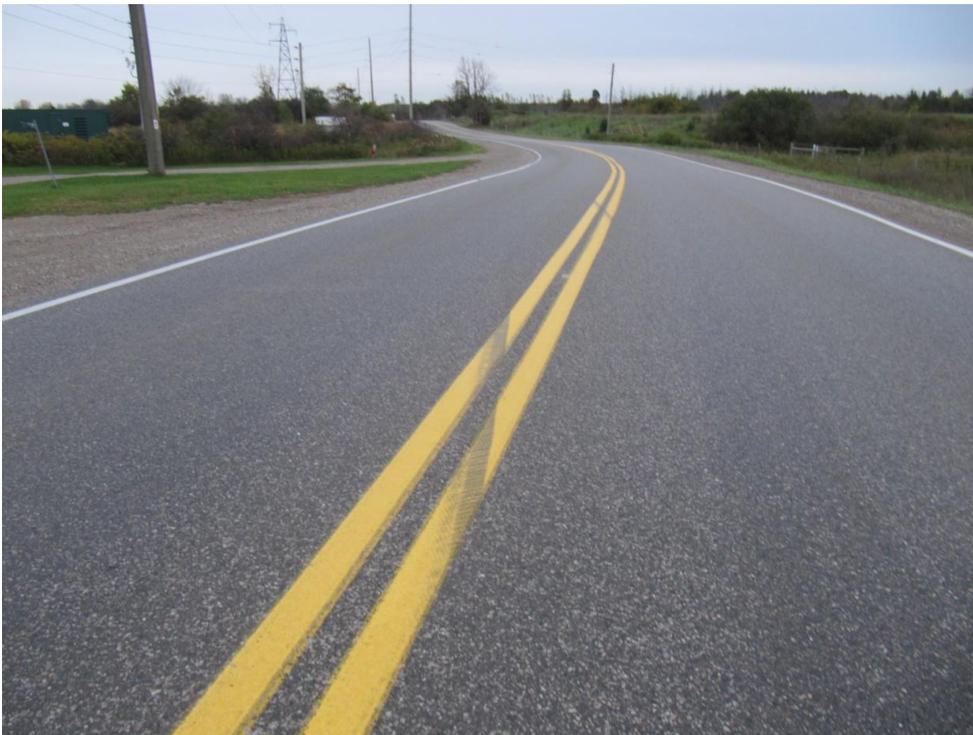


Figure 59: Incident of October 16th, 2011. This is a view looking south between the two segments of the S-curve. Yaw marks can be seen on the centre-line where a southbound vehicle travelled off the road and into the east roadside in the background.



Figure 60: View of the tire marks caused by the southbound vehicle as it slid through the grass and driveways and into the fence and brush in the background.



Figure 61: View of the location where the southbound vehicle struck the fence, small tree and telephone junction box before passing through these and then into the field in the background.



Figure 62: View looking north from the field where the southbound vehicle came to rest.

Next we examine the police-reported collision that occurred on October 25th. The police information indicates that at 1350 hours a passenger car was “Travelling south” when it went out of control resulting in property damage only.

The Gorski Consulting dataset indicates that the S-curve as examined on November 3rd. The description indicates that evidence was found of a southbound vehicle going out of control between the two segments of the S-curve. The vehicle travelled into the west roadside where it struck the wire fence. Figures 63, 64 and 65 show the evidence of that incident.

The evidence from this incident demonstrates again that the police notation of the “Location” has not identified the location of the collision. The coding “Travelling south” does not indicate where the collision occurred on Clarke Road within the 1300 metres between Fanshawe Park and Sunningdale Roads. It is reasonable to conclude however that the evidence found by Gorski Consulting on November 3rd was related to the collision of October 25th reported in the police dataset.

The police dataset indicates that the next collision occurred on December 12th when a vehicle “Travelling south” struck a deer. However the Gorski Consulting dataset indicates that two other incidents occurred in the S-curve, one on November 7th and the other on December 8th.



Figure 63: Collision of October 25, 2011. View looking south at tire marks leading to the west roadside between the two segments of the S-curve. This photograph was taken on November 3rd when the site was examined by Gorski Consulting.



Figure 64: View of evidence of an impact to the west fence.



Figure 65: View of various damaged parts of a vehicle strewn at the fence impact.

In the incident of November 7th a southbound vehicle travelled onto the right shoulder between the two segments of the S-curve. A yaw mark was visible indicating that the vehicle was rotating counter-clockwise as it exited the shoulder and returned back into the southbound lane. Additional yaw marks at the centre-line indicated that the vehicle was in an advanced stage of rotation as it moved into the northbound lane. There was no other physical evidence beyond the tire marks at the centre-line. Given the character of the yaw marks the vehicle would have been travelling with some speed as it entered the opposing lane therefore it is not certain what would have caused no other evidence to be found. These yaw marks were not present at the site when Gorski Consulting conducted its examination of November 3rd therefore it provides a window of time of 3 or 4 days within which this incident could have occurred. Figures 66, 67 and 68 show the evidence of the yaw marks that were found.



Figure 66: Incident of November 7th, 2011. This is a view looking south in the segment between the two curves of the S-curve. A yaw mark can be seen the white edge-line indicating that a southbound vehicle is leaving the right shoulder. In the background are more yaw marks on the centre-line indicating that the southbound vehicle reached an advanced stage of rotation as it moved into the northbound lane.



Figure 67: View of the yaw marks at the roadway centre-line indicating that the southbound vehicle was in an advanced stage of rotation as it passed through the northbound lane.



Figure 68: View looking north from the east roadside where the yaw marks are shown coming toward the camera. Evidence of recent scraping on the east shoulder indicates that someone removed the physical evidence of the southbound vehicle's motion in this vicinity.

In the incident of December 8, 2011, yaw marks were located on the road segment between the two portions of the S-curve indicating that a vehicle rotated into the west roadside. While rotating counter-clockwise it passed close the wire fence and then re-entered the southbound lane. Figures 69 and 70 show that evidence.



Figure 69: Incident of December 8, 2011. This is a view looking south at the west shoulder at the south portion of the S-curve. Tire marks can be seen in the grass where a southbound vehicle rotated counter-clockwise and then re-entered the southbound lane.



Figure 70: View looking north at the tire marks on the southbound vehicle on the west roadside.

With respect to the collision of December 12th, the police dataset indicated that it occurred at 1528 hours and involved an impact of deer struck by a passenger van “Travelling south”. Once again such a description does not indicate where the collision occurred within the 1300 metres of Clarke Road. Although the site was examined by Gorski Consulting on December 16th, no evidence was found within the S-curve that would suggest that a deer was struck. However it is likely that such an event would produce little in the way physical evidence on the roadway in a high percentage of cases. Thus it cannot be certain where this incident occurred within the 1300 metres of Clarke Road.

Another collision occurred that was documented by Gorski Consulting on December 20th and was not reported in the police dataset. The evidence indicated that the driver of a northbound vehicle lost control resulting in the vehicle’s clockwise rotation and impact with the earth embankment on the east roadside just north of the north portion of the S-curve. Because the evidence indicated that the vehicle partially mounted the embankment that was several feet high it suggests that the impact was not just a minor affair. Figures 71 through 75 show the evidence of that impact.



Figure 71: Incident of December 20, 2011. This is a view looking north just past the north portion of the S-curve. A northbound vehicle produced loss-of-control yaw marks that can be seen on the east shoulder just beyond the utility pole.



Figure 72: View of the yaw marks on the east shoulder indicating the northbound vehicle was rotating clockwise and was sliding approximately sideways, leading with its left side, when it struck the earth embankment.



Figure 73: View looking north at the top of the earth embankment indicating that the striking vehicle mounted the embankment and came to rest near its edge.



Figure 74: View looking south from the top of the earth embankment showing the relationship of the tire marks and the north portion of the S-curve in the background.



Figure 75: View looking south showing evidence of an additional disturbance on the west shoulder adjacent to where the vehicle struck the embankment. It is likely that this evidence relates to towing activities related to the original impact.

The final collision reported in the police dataset reportedly occurred at -845 hours on December 28th. The driver of a southbound car reportedly lost directional control of a passenger vehicle resulting in a “property damage only” collision. Again the location of this collision was coded as “Travelling south” therefore the police data do not indicate where the collision occurred within the 1300 metres of Clarke Road.

It would appear that the Gorski Consulting dataset did not locate any evidence with respect to this collision. However this dataset only referred to inspections of the S-curve in the year 2011. Because the collision occurred only 3 days before the end of the year there could be evidence reported in examinations of the S-curve by Gorski Consulting in the early part of January of 2012. This possibility was explored and it was noted that during an examination of the site on January 12th, 2012 evidence was observed that a southbound vehicle struck a tree on the west roadside at the south portion of the S-Curve. Evidence of that collision is shown in Figures 76 and 77.



Figure 76: Collision of December 28th, 2011. This is a view looking south at a clump of trees located on the west side of Clarke Road just south of the south portion of the S-curve. This photograph was taken on January 12, 2017. There is evidence of a recent impact to base of one of the trees that likely occurred on December 28th as reported in the police dataset.



Figure 77: View of the evidence of a fresh impact to the base of the trees located on the west side of Clarke Road at the south end of the S-curve.

4.0 Discussion

Only one of the seven police-reported collisions was not matched with Gorski Consulting data. That single collision reportedly occurred on December 12, 2011 and involved an impact with a deer. Since the police dataset did not identify where the deer impact occurred it was not possible to determine whether the collision might have occurred within the confines of the S-curve. Given the (possibly) minimal physical evidence that could be generated in striking a deer it is quite possible that the impact occurred within the S-curve but that cannot be determined for sure.

What is striking about the comparison is that no collisions were reported to have occurred in the 1300 metres of Clarke Road except in the S-curve. That is not completely surprising as it would be expected that a majority of collisions would occur at a curve rather in the straight section of a road. However the magnitude of this relationship is disquieting. It leads to the question whether the police agency misunderstood that the request for collision data referred to the full length of the Clarke Road between Fanshawe Park and Sunningdale Roads, not just the S-curve.

A number of significant collisions occurred at the S-curve of Clarke Road that were not part of the reported collisions in the police dataset. To review, those collisions were as follows:

1. February 28th collision into west fence.
2. April 8th collision into west fence.
3. August 30th impact of embankment of east roadside.
4. October 16th impact of fence, telephone box and small tree.
5. December 20th impact of embankment of east roadside.

These five significant collisions need to be viewed in the context that the police dataset indicated that only 7 collisions occurred on Clarke Road in the year 2011. Indisputable photographic evidence by Gorski Consulting indicates that another 5 collisions occurred on Clarke Road that were not identified in the police dataset. Thus about 42 percent of collisions at this site were never documented by police.

Furthermore, there were many additional incidents identified by Gorski Consulting that did not result in significant collisions but never-the-less could have resulted in collisions.

How does one achieve comfort in reconciling with these facts? For many years various government agencies have used police-reported collision data as part of the basis for determining whether roadway improvements or upgrades are required. In other instances, various court trials of a civil or criminal nature use police-reported collisions as part of their basis for determining whether a roadway deficiency was a potential cause of a collision. How can these data be used to support such important conclusions when 42% of the true collision occurrences appear to be unreported?

Certainly the collision numbers reviewed in this article are very small. From a statistical viewpoint then cannot demonstrate a “significant” relationship. However not all conclusions can be based on statistical principles. From a common sense viewpoint is it possible that reporting of collisions at other roadway curves are likely to be under-reported? Given the circumstances that are common in every jurisdiction the answer should be “Yes”, similar results are likely to be observed elsewhere.

Gorski Consulting will be continuing to review the remainder of the collision data for the years 2012 to 2016.

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