

Ronald A. Thomas – Kaytlyn’s Law v3.14.2022 meeting with the Honorable Tom Tiffany’s office
3.18.2022

Constituent:

Ronald A. and Janelle L. Thomas
143990 Mount Vista Rd
Mosinee, WI 54455

The Ask:

Please consider how to best implement **Kaytlyn’s Law**. We the Thomas family request a Bill be proposed to **support and encourage the acceleration of next generation of autonomous vehicle technology** to prevent fatalities due to impairment and human error, especially to ensure this lifesaving data driven technology reaches our rural district in the great state of Wisconsin.



Kaytlyn Madison Thomas (2003 – 2021)

Ronald A. Thomas – Kaytlyn’s Law v3.14.2022 meeting with the Honorable Tom Tiffany’s office
3.18.2022

Background:

I, Ronald A. Thomas (46), am Kaytlyn’s father. My wife of 23 years, Janelle (44), and I had six children:

Ryan (22), UW-Stevens Point BS dual Chemical and Paper Science Engineering (2022). (fiancée Emily, granddaughters: Ivy (1), and Aspen (6 months not pictured.)

Jaelyn (20), Co-Valedictorian. Wisconsin National Guard Medic Specialist. UW-Lacrosse Biology. Plans to be a M.D.

Kaytlyn (18), Deceased. Front-line worker through the shutdowns. Volleyball player, lifelong Mosinee SilverBlades skater and multiple state syncro team champions, Plans for UW-Stout Fashion program. Dearly missed by all her family and friends, my sunshine.

Lauryn (16), brilliant student (4.0), taking advanced college credits, plans for UW-Madison M.D.

Addisyn (14), creative artist, club volleyball, and soon will be learning to drive.

Carsyn (13) - “Monopoly” tycoon and “Minecraft” wizard.



Thomas Family Pictures Fall 2020.

Back: Kaytlyn, Lauryn, Ron, Ryan, Ivy, Emily, Jaelyn. Front: Addisyn, Janelle, Carsyn

Janelle and I both grew up on small family farms in Central Wisconsin with self-employed parents and fathers who ran their own businesses. Janelle is an RN with a BS in Management from UW-Stout. I am a mechanical engineer from UW-Madison, have two MS degrees from UW-Platteville, and have completed all but dissertation (ABD) in Career and Technical Education Leadership at UW-Stout. I currently work for UW-Stout in the Manufacturing Outreach Center, a NIST MEP affiliate. I help small manufacturers in our region find pathways to sustainable growth and prosperity through continuous improvement, quality management systems, and engineering related projects, like automation and Industry 4.0.

As a development engineer who has worked with advanced manufacturing automation and digital technologies, such as Industry 4.0 and SMART manufacturing, I am confident that the SMART phone used by the at-fault driver collected enough data to know that the operator was impaired and driving the wrong way on the interstate. If a nationwide standard system was in place to use vehicle data, this crash could have been predicted, prevented locally, and then the data shared nationally. At the very least, with very little investment, it could alert law enforcement, emergency services, and other drivers the location when someone is driving on the WRONG SIDE OF THE INTERSTATE!

Kaytlyn’s Story:

On Monday July 12, 2021, a head-on collision at 11:10 PM on US51/I39S took the life our 18-year-old daughter, Kaytlyn Madison Thomas. The collision was caused by a wrong-way-driver travelling North in the Southbound lanes. The at-fault driver had been drinking at local establishments and at residences since early afternoon. Upon leaving an establishment in the Schofield area at approximately 10:07 PM, she was called in to 911 for driving erratic on the US51/I39S highway at 10:50 PM. Police were dispatched to investigate. Near or just over the Marathon/Portage line, the individual turned around and began heading North in the South bound lanes. She was on the road for about 65 minutes before the fatal crash occurred and at least 20 minutes after being reported to 911 for erratic driving behavior.

Unfortunately, Kaytlyn’s story is now intertwined with several troubling statistics. The projected data for 2021 indicates that approximately 40,000 Americans will perish in auto crashes this year with historic studies indicating that 94% are due to human error. About 25% or 10,000 deaths are due to impairment, equally about 10,000 fatalities are novice and elderly drivers, and around 400 lives are lost due to wrong-way-drivers. This is an unacceptable offense, on our own soil, to our collective American Dream, causing great loss to our families, our economy, and our way of life.

Initial Issues/Observations:

1. The individual who last served the at-fault driver, offered her a ride home. He then looked for her in the bar. When not found, he went to the parking lot to see her taillights driving away. At 10:07PM he attempted to contact her by phone twice and by text once. She did not respond per the police report cited interview. The subsequent toxicology report revealed that the at-fault driver had a BAC of 0.244. (Root cause: people failed and vehicle safety technology failed.)
2. Police were called, as best we can tell from the police report at 10:50PM but were unable to dispatch and intercept in time to verify the eye-witness call of an impaired or wrong way driver. (Root cause: protective emergency system failed.)
3. State of WI has no Dram Shop laws. As such, the establishment nor the server is accountable for serving to an apparently visible excess. Convenient that only the at-fault driver is legally

responsible, but no longer around to be held accountable for taking the life, liberty, and pursuit of happiness unjustly from another or her family. These disparate state laws prevent closing the loop at a society level by protecting powerful insurance companies and establishments from being held accountable for losses due to our culture of excess. (Root cause: WI system failed.)

4. State laws vary on wrongful death. In Wisconsin, we the parents of a child are limited in our legal recovery from the loss. Although Kaytlyn was a living-at-home dependent, being 18 years old, we are further legislatively limited in our recovery. We are losing an entire lifetime of hopes and dreams, but the loss of companionship of a child is excluded. Our country, society, and economy are losing a brilliant, caring, hard worker. These disparate state laws prevent closing the loop at a society level by protecting powerful insurance companies and establishments from having to be held accountable for our system’s failures to protect the innocent. (Root cause: society and legal system failed.)
5. Due process has been further delayed by inconsistencies in vehicle data standards and retention protocols. Accident reconstruction is delayed due to difficulty in locating vehicle speed and control data records from just prior to crash. Both vehicles have different systems, no requirements are in place to the author’s knowledge. Further injury occurred during our attempts to collect the required data, Kaytlyn’s vehicle was “lost” and then finally determined had been destroyed. (Root cause: old vehicle data systems, insurance, and legal system failed.)
6. If you are following along, insurance companies plus taverns/establishments/owners/servers with lobbyists and the legal system **5**; Hard-working, rural Wisconsin family **0**.)

Initial Solution Observations:

1. How do we prevent this from happening? What are some solutions to the root causes?
2. History and experience have shown that our society cannot depend on establishments who profit from serving the impaired or the impaired themselves to make good judgements. Further, it is nearly impossible for protective emergency services to intercept prior to fatality and costly to all after. So, if people and protective systems unable to stop crashes after years of efforts, the only addressable root cause remaining - to prevent the chain of events that lead to crashes, the resulting fatalities, and generational family loss - is vehicle safety technology. It has long proven that vehicle safety technology saves lives. Today, we finally have an opportunity to make safety systems be PREVENTATIVE instead of only reactive.
3. Proposal: Eliminate crashes by removing people from the driving process by using preventative and impartial data driven systems, i.e., robotic, or autonomous vehicles. This solution depends on data, transparency, technology, standards, and connectivity. This menace impacts us all at a national level, but our rural districts and populations are already being left behind digitally. National legislative attention would dramatically benefit our rural districts and populations if you choose to act now!
4. Kaytlyn’s phone through the Life360 app maintained a record of the whole trip. It even sent us a text message when the abrupt stop was detected. Much of the family was able to be on site on Monday night to share the bad news, rather than independently finding out hours or days later.
7. The Life360 app only records and provides feedback to users at a macro level. However, many phone apps can track the details of your walk and location to a street/sidewalk level of detail. If a phone application can track to that level of detail, why can’t that technology be embedded in automobiles to track driving behavior and objectively report or notify others, including

emergency services prior to such an incident. Consider that a phone can track walking by steps, compass directions, and log detailed kinematic data (GPS location versus time) from numerous sensors and then share that data with other authorized users, likely an automobile with similar sensors and cameras could determine an individuals poor driving or impairment and safely disable the vehicle based on objective data. Overrides could be used such that a non-impaired person would be able to intervene and maintain driving in unique use cases.

8. The estimated comprehensive cost of road crashes far exceeds the direct economic costs. In 2010, vehicle crashes cost the U.S. an estimated **\$836 billion**. Per the author’s calculations:
 - a. Scale to 2019 total individuals impacted values and add inflation per year (**\$1,036B**) or about 5% of US GDP)
 - b. Author’s NOTE: this is misleading of the true economic impact. This year’s fatal losses compound on the losses before, as a compounding exponential function. The TRUE economic opportunity cost is impossible to determine.
 - c. 348,591 fatalities over 10yr period. Equivalent to losing the economic output of a US city between the size of Saint Paul, MN and Anaheim, CA every 10yrs.
 - d. Don’t forget the 25M injured in vehicle crashes over the 10yr period. This would be a state in between Texas and Florida in population! That’s 29 to 38 electoral votes.

Bill proposal pathways to consider:

Path 1: Kaytlyn’s Law – Part 1

Next generation technology to prevent auto crashes by all drivers, especially protecting the innocent from impaired or inattentive drivers or human error and even protect us from ourselves. Driver Monitoring Systems (DMS) mandates in Infrastructure and Jobs Act 2021 is great. However, this is only a partial solution to the automotive fatalities issue, especially in the underserved rural areas of the US. Currently, most Society of Automotive Engineers (SAE) fully autonomous vehicle (AV), defined as SAE L5, development is in major, south-western, US “tech hub” cities; little to no attention is paid to northern, rural areas.

What is next to solve auto fatalities? We suggest a “Accelerate Safe Autonomous Vehicle Development for All” as a national plan.

Consider that rural areas, like our Central to Northern Wisconsin region:

- has increasing use of impairing substances with most people traveling by automobile to establishments and using highway or interstate level speeds.
- Speed is highly correlated to auto fatalities. Current auto safety is reactive, or protects occupants once a crash has occurred, at high speeds these systems have limited benefit.
- has limited access to ridesharing or taxi type services.
- has a culture of social and binge alcohol consumption.
- is unlikely to be commercially attractive for autonomous development without incentives or mandates due to expansive terrain and low vehicle numbers relative to suburban or big cities.
- has limited data and cell connectivity in rural areas adding further barriers to data intensive activities, such as the development of AVs.

To overcome barriers to rural development of autonomous vehicles, likely more data, use cases, and long-tail exceptions are needed to train algorithms. Prevention through objective data and speed limiting are one way to reduce crashes and fatalities. Having an AV is even better way to ensure that we all make it home safely by removing the root cause of crashes from the driving process, the human. 94% of crashes are human error.

- National vehicle data system standards. – minimum standards provide ability to share critical driving and automotive data independent of manufacture. OEM can collect more and use more to improve proprietary algorithms. To foster technology acceleration, a minimum universal data sharing standard, building on OBDII success, may be needed.
- National DB of anonymous data to accelerate development of OEM and 3rd party solutions. Even with DMS, approximately 289 million autos on the road will take nearly 20 years to replace. 3rd party add-ons can provide an interim solution.
- Institute vehicle “Black box” requirements. 24-hour minimum permanent log of minimum standard data. Create minimum crash survivability standards of construction for auto black box.
- Create smart city/road infrastructure investment incentives. Set minimum data connectivity on roadways. Plan to fund the connectivity gap nationwide.
- Determine and pilot national rules for informing others of hazards or communicating emergency needs of other drivers. Use live traffic and driving data to update motorists of Wrong Way Drivers or erratic driving or emergency vehicles. Like “amber alerts” but for driving.
- Data can be used according to set rules to modify or limit vehicle functions, up to and including disabling user operational controls.
- Data storage history and safety requirements could ensure that data is available to determine reliably and consistently what happened prior to a crash or other reportable incident.
- Panel/committee to consider parental vehicle controls or dual-factor authentication. Minor’s phones have parental rights controls, cars do not. If the car can go 200mph, it doesn’t discriminate on who drives or what level they can drive, just needs a key and fuel.
- Authorize remote Police and emergency protective services surveillance technology – panel to investigate issues with allowing and funding for the use drones to “get eyes” on events faster. (Other driver was on the road about 20 minutes after being reported to 911. Police stated, “never saw it to confirm wrong way driver.”)

The end game for eliminating most crashes, 94% are human error, is mobile robots or autonomous vehicles (AVs). Every effort to accelerate using best practices in technology development should be taken. If automobiles had such data standards, multiple safety improvements could be realized in the near term and provide needed insight to benefit the long term.

- Current DMS in Infrastructure and Jobs Act may save up to 9,000 lives per year. This solution pathway addresses the next 30,000 lives lost every year in vehicle crashes.
- Rural areas like ours may not realize AVs for a generation as we don’t have enough data and currently reside in economically unattractive areas, like our Northern WI area, for commercial automated driving development or solutions.
- Standardizing and collecting vehicle data on a national level, if done correctly, can provide data to train algorithms for more varied rural driving conditions.

- To collect said auto data, would require high speed wireless data communication infrastructure access for all public roads. This requires a deeper assessment of the current state. Likely without more investment, our rural areas will suffer a digital death spiral. To be connected, young workers move to the cities who better support the modern digital lifestyle.
- Near term, vehicle and driving data standards can inform drivers of behavior and performance, young drivers, and elder account for about 10,000 fatalities per year. Youth are likely to accept the data driven feedback from technology to improve skill through monitoring or gamification, while also providing options for parental piece of mind. Older drivers are already more likely to purchase high-end vehicles with advanced driver-assistance systems (ADAS).
 - Digitize and improve driver education outcomes by providing objective standards based on the vehicles actual data relative to safe driving standards.
 - Use the data to improve regular driver skill with report cards – private. Can be shared with insurance to lower rates.
 - Digitize DOT driving tests and license renewals with objective, independent data.

Kaytlyn’s Law – Part 2:

National standards for accountability for establishments serving impairing substances. Consider proposing a National Dram Shop Law.

- Propose a National Dram Law. At a 0.244 BAC, or 3X the legal limit, seems punishing an individual is not sufficient to deter this unproductive behavior. At a certain level of commercially provided intoxication, consider at 2X the legal limit, a licensed establishment that served irresponsibly could be held accountable.
- Levels and limits of other impairing substances to be determined.
- Congressional panel to investigate wrongful death statues and suggest preferred language and limits if any, consider punitive liability allowances for impaired or vehicle related fatalities.

Thank you for your time and thoughtful consideration. We look forward to assisting your office in implementing the Honorable Mr. Tom Tiffany’s recommended course of action.

Ronald A. Thomas, BS ME, MS Engrg, MS PM, Ed.D ('22)



thomasr@kmtmf.org

715.573.7378

References

- AAA. (2019). Advanced Driver Assistance Technology Names. *American Automobile Association, January*, 1–21. <https://www.aaa.com/AAA/common/AAR/files/ADAS-Technology-Names-Research-Report.pdf>
- Association for Safe International Road Travel (ASIRT). (2022). *Annual Global Road Crash Statistics*. <https://www.asirt.org/safe-travel/road-safety-facts/>
- Bishop, P., & Hines, A. (2012). *Teaching about the future*. Springer.
- Blincoe, L., Miller, T. R., Zaloshnja, E., & Lawrence, B. A. (2014). The economic and societal impact of motor vehicle crashes, 2010. *Motor Vehicle Crashes: Economic and Societal Impact, In Depth, 2015*(May), 1–285.
- Buss, D. (2021 May 31). *America needs to build our own chip plans for sake of auto industry*. *Forbes Inc.* <https://www.forbes.com/sites/dalebuss/2021/05/31/america-needs-to-build-our-own-chip-plants-for-sake-of-auto-industry/>
- Center for Disease Control (CDC). (2020). *Impaired Driving: Get the Facts*. https://www.cdc.gov/transportationsafety/impaired_driving/impaired-driv_factsheet.html
- Center for Disease Control (CDC). (2021). *Distracted Driving*. https://www.cdc.gov/transportationsafety/Distracted_Driving/index.html
- Clark County History & Genealogy Records. (2021). *Obit: Ronald A. Debevec*. [email of microfiche record] stan@wiclarkcountyhistory.org. www.wiclarkcountyhistory.org/
- Daly, T., Schneider, J. (2021). *Will China Retaliate Against U.S. Chip Sanctions?* <https://www.lawfareblog.com/will-china-retaliate-against-us-chip-sanctions>
- i-Micronews, (2021 February 01). *The rise and fall of the ADAS promise now disrupted by AVs*. <https://www.i-micronews.com/the-rise-and-fall-of-the-adas-promise-now-disrupted-by-avs>
- European Commission. (2012). *EU Road Safety Policy Framework 2021-2030. Commission Staff Working Paper. 2019*, 1–17. https://www.who.int/violence_injury_prevention/road_safety_status/2018/en/
- Garrison, J. & Rouan, R. (2021 November 29). *Drunken-Driving Warning Systems Would Be Required for New Cars Under U.S. Bill*. *USA Today*. <https://www.usatoday.com/story/news/politics/2021/11/29/bidens-infrastructure-law-requires-technology-stop-drunken-drivers>
- Heineke, K. (2019). The future of mobility is at our doorstep. *McKinsey Center for Future Mobility*, 25–38. <https://www.mckinsey.com/industries/automotive-and-assembly/our-insights/the-future-of-mobility-is-at-our-doorstep#>
- Hilbert, R. C. (2011). *Distracted driving*. *Distracted Driving*, 1–220. <https://doi.org/10.4324/9781315516530-2>

Ronald A. Thomas – Kaytlyn’s Law v3.14.2022 meeting with the Honorable Tom Tiffany’s office
3.18.2022

Lee, D. (2020). Autonomous Vehicle Implementation Predictions: Implications for Transport Planning. *Transportation Research Board Annual Meeting*, 42(5 June 2020), 1–39.

Mothers Against Drunk Driving [MADD]. (2021) *Updated Report : NO MORE VICTIMS : Technologies to eliminate drunk driving , and other forms of driver impairment are ready for the road.*
<https://www.madd.org/wp-content/uploads/2021/05/MADD-Response-NHTSA-RFI.pdf>

Taylor, R. A. (2021 April 27). *Driving Innovation: The Future of Automotive Mobility, Safety, and Technology.* [Testimony Transcript] U.S. Senate Committee on Commerce, Science and Transportation Subcommittee on Surface Transportation, Maritime, Freight and Ports. Mothers Against Drunk Driving. <https://www.madd.org/get-involved/haltact>

Manstetten, D., Beruscha, F., Bieg, H., Kobiela, F., Korthauer, A., Krautter, W., and Marberger, K. (2020). *The Evolution of Driver Monitoring Systems: A Shortened Story on Past, Current and Future Approaches How Cars Acquire Knowledge About the Driver's State.* Mobile HCI '20: 22nd International Conference on Human-Computer Interaction with Mobile Devices and Services. October 2020 Article No.: 60. pp 1–6. <https://doi.org/10.1145/3406324.3425896>

MarketWatch. (2021, October 22). *Driver monitoring system market: Research consumption, companies, industry report analysis and future demand.* <https://www.marketwatch.com/press-release/driver-monitoring-system-market-research-consumption-companies-industry-report-analysis-and-future-demand-2021-10-22>

Mitchell, R. (2021 April 29). The (near) future of driving: Cars that watch you watch them steer. 1–14. *Los Angeles Times.* <https://www.latimes.com/business/story/2021-04-29/driver-monitoring-tech-self-driving>

National Center for Statistics and Analysis. (2020, November). *Summary of motor vehicle crashes: 2018 data.* (Traffic Safety Facts. Report No. DOT HS 812 961)

US. D. O. T., Klein, R. H., Allen, R. W., & Peters, R. A. (1976). *DRIVER PERFORMANCE MEASUREMENT AND ANALYSIS SYSTEM (DPMAS) Volume I Description and Operations Manual . Contract No . DOT-HS-359-3-733 August 1976 Final Report National Highway Traffic Safety Administration. I.*

US. D.O.T. NHTSA. (2018). *U.S. Traffic Safety Facts 2018 Data.*
<https://crashstats.nhtsa.dot.gov/Api/Public/ViewPublication/812961>

US. D.O.T. NHTSA. (2019). *Traffic Safety Facts 2018 Alcohol-Impaired Driving. November, 1–10.*

US. D.O.T. NHTSA. (2020). *Traffic Safety Facts– 2010-2019 Data Table.*
<https://cdan.nhtsa.gov/tsftables/National%20Statistics.pdf>

References used for Inflation and GDP Extrapolation

<https://tradingeconomics.com/united-states/gdp>

<https://www.usinflationcalculator.com/inflation/current-inflation-rates/>

