Pokémon GO—A New Distraction for Drivers and Pedestrians

Pokémon GO, an augmented reality game, has swept the nation. As players move, their avatar moves within the game, and players are then rewarded for collecting Pokémon placed in real-world locations. By rewarding movement, the game incentivizes physical activity. However, if players use their cars to search for Pokémon they negate any health benefit and incur serious risk.

Motor vehicle crashes are the leading cause of death among 16- to 24-year-olds, whom the game targets. Moreover, according to the American Automobile Association, 59% of all crashes among young drivers involve distractions within 6 seconds of the accident. We report on an assessment of drivers and crashes among young drivers involved in distraction within 6 seconds of the accident. We report on an assessment of drivers and pedestrian crashes potentially caused by Pokémon GO by mining social and news media reports.

Methods | Twitter (https://twitter.com/) postings containing the terms “Pokémon” and “driving,” “drives,” “drive,” or “car” (N = 345,433) were obtained for July 10 through 19, 2016. A random sample of 4,000 tweets was generated, and estimates from this sample were used to create population-level estimates. Each tweet was reviewed by 4 investigators (J.W.A., E.C.L., J.-P.A., and L.H.) and characterized as to whether (1) a driver was playing, (2) a passenger was playing, or (3) a pedestrian interacted with traffic while playing Pokémon GO. Tweets with driving and/or pedestrian safety messages were also noted. Interreliability on 100 tweets yielded a k = 0.68.

Google News (https://news.google.com/) reports published from July 10 to 20, 2016, that included “Pokémon” and “driving” were obtained, yielding 321 story clusters. Reports of crashes caused by Pokémon GO were identified; duplicate coverage was eliminated.

All analyses relied on public, anonymized data and adhered to the terms and conditions, terms of use, and privacy policies of Google and Twitter, and were performed under an institutional board exemption from Johns Hopkins University. No exact news reports or tweets are included in this report.

Results | Thirty-three percent (95% CI, 31%-34%) of tweets indicated that a driver, passenger, or pedestrian was distracted by Pokémon GO, suggesting there were 113,993 (95% CI, 107,084-117,447) total incidences reported on Twitter in just 10 days. In contrast, safety messages were less common (13%; 95% CI, 12%-16%). The remainder of postings (54%) were hypothetical, unclear, or unrelated (Figure).

Eighteen percent (95% CI, 17%-19%) of tweets indicated a person was playing and driving (“omg I’m catching Pokémon and driving”) and 11% (95% CI, 10%-11%) indicated a passenger was playing (“just made sis drive me around to find Pokémon”). Four percent (95%, CI, 3%-4%) indicated a pedestrian was distracted (“almost got hit by a car playing Pokémon GO”).

There were 14 unique crashes—1 player drove his car into a tree—attributed to Pokémon GO in news reports during the same period.

Discussion | Pokémon GO is a new distraction for drivers and pedestrians, and safety messages are scarce. Delayed reaction to mobile phone distractions has hampered public safety; however, by relying on real-time data (as given herein) public health can stay ahead of emerging problems.

Our findings can help develop strategies for game developers, legislators, and the public to limit the potential dangers of Pokémon GO and other augmented reality games. For instance, passengers using mobile devices are typically not considered a driving risk, but given its augmented reality features, gaming passengers may implore drivers to take risks to aid their play.

Pokémon GO’s makers can also voluntarily make their game safer. Game play is already restricted at speeds greater than 10 miles per hour. Making the game inaccessible for a period after any driving speed has been achieved may be necessary given our observations that players are driving or riding in cars. At the same time augmented reality games might be disabled near roadways or parking lots to protect pedestrians and drivers alike, given reports of distractions herein. Games might also include clear warnings about driving and pedestrian safety.

Traditional surveillance is needed to clarify our findings. Still, even with a limited scope covering just 10 days there were more than 110,000 discrete instances where drivers or pedestrians were distracted by Pokémon GO and some crashed.

![Figure. Pokémon GO Tweets](attachment://figure.png)

<table>
<thead>
<tr>
<th>Drivers</th>
<th>Passengers</th>
<th>Pedestrians</th>
<th>Uncategorized</th>
<th>Safety Messages</th>
</tr>
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| "A normal drive home = 5 min. Stopping every block to catch Pokémon GO = 20 min." | "Just made sis drive me around to find Pokémon." | "Just saw a kid get clipped by a car trying to catch a Pokémon..." | "From my view, Pokémon GO is not dangerous. Proves that some people are just really stupid."
| "My mom just legit stopped the car in the middle of the road to catch a Pokémon..." | "Spent the drive back with my bros phone in one hand and my phone in the other, him yelling for me to catch Pokémon for him." | "Almost got hit by a car playing Pokémon GO." | "Pokémon GO is driving insane amounts of sales." |
| "omg I’m catching Pokémon and driving." | "My mom is driving me around to help me find Pokémon imao." | "Just had my first experience with a kid walking in front of my car while absorbed in playing Pokémon GO." | "Slept the whole drive do u know how many Pokémon i missed?" |

Examples of Twitter postings within each of the labeled categories. Tweets were modified to protect individuals from being identified by or linked to this report.
It is in the public interest to address augmented reality games before social norms develop that encourage unsafe practices.

Now is the time to develop appropriate controls.

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Published Online: September 16, 2016. doi:10.1001/jamainternmed.2016.6274

Author Contributions: Dr Ayers had full access to all the data in the study and takes responsibility for the integrity of the data and the accuracy of the data analysis.

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Acquisition, analysis, or interpretation of data: All authors.

Drafting of the manuscript: All authors.

Critical revision of the manuscript for important intellectual content: All authors.

Statistical analysis: Leas, Dredze, Allem.

Obtained funding: Hill.

Administrative, technical, or material support: Dredze, Grabowski.

Study supervision: Ayers, Dredze, Hill.

Conflict of Interest Disclosures: Drs Ayers and Dr Dredze and Mr Leas share an equity stake in Good Analytics, a social media monitoring company that uses some of the methods embodied in this work to support public health practice. Dr Dredze has also received consulting fees from Sickweather LLC, who use social media for infectious disease surveillance. Neither the data nor the methods described in this article are proprietary. Dr Grabowski is a paid employee of the AAA Foundation for Traffic Safety. No other disclosures are reported.

Funding/Support: The study was supported by funding from the National Highway Traffic Safety Administration through the California Office of Traffic Safety (Dr Hill).

Role of the Funder/Sponsor: The funders had no role in the design, conduct, or interpretation of the study; or the preparation, review, or approval of the manuscript.

Disclaimer: The content is solely the responsibility of the authors and does not necessarily represent the official views of their employers or the funders.


LESS IS MORE

Clinicians’ Perceptions of Barriers to Avoiding Inappropriate Imaging for Low Back Pain—Knowing Is Not Enough

Overuse of imaging for low back pain (LBP) is a considerable problem. Approximately 31% of lumbosacral magnetic resonance imaging (MRI) scans performed were deemed inappropriate in the Department of Veterans Affairs (VA), and similar rates of inappropriate MRI use have been seen outside of the VA. Seven Choosing Wisely (CW) campaign recommendations support not ordering imaging tests for patients with nonspecific LBP. Our objective was to determine what clinicians perceive to be barriers to following the CW recommendations to avoid ordering imaging tests for nonspecific LBP.

Methods | We invited a national random sample of VA nonresident clinicians (physicians, nurse practitioners, and physician assistants) to participate in an online survey from October 6, 2014 to December 8, 2014. The survey included demographic questions and a hypothetical scenario in which a 45-year-old woman with nonspecific LBP without red flag symptoms requested a computed tomographic (CT) or MRI scan. After reading the scenario, respondents were asked how they would respond to the patient’s request and factors that influenced their decision to obtain imaging. Using a 4-point scale, respondents also rated their own difficulty in following the CW recommendations to avoid imaging for nonspecific LBP in the first 6 weeks, and how they perceive patients’ willingness to accept this recommendation. We created a multivariable logistic regression model to identify provider characteristics associated with perceived difficulty in following this recommendation. The VA Ann Arbor Healthcare System institutional review board approved the study, which included a waiver of written informed consent signed by participants, who were not compensated for their participation, but who were entered into a lottery for a chance to win 1 of 30 $100 Amazon gift cards.

Results | Of the 1224 eligible clinicians, 579 returned usable surveys (response rate, 47.3%; numbers vary owing to item nonresponse). Among the respondents, 305 (56.2%) were women, 379 (69.5%) were physicians, 130 (23.9%) were nurse practitioners, and 36 (6.6%) were physician assistants.

Only 18 clinicians (3.3%) thought the patient in the scenario would benefit from having a CT or MRI scan (Table 1). In addition, 420 clinicians (77.1%) reported they would worry that ordering imaging would result in future unnecessary tests or procedures. However, a similar number of clinicians (414, 75.7%) felt they would be unable to refer the patient to a specialist for further evaluation without obtaining imaging first. More than half of clinicians (316, 57.8%) worried that the patient would be upset if she did not receive imaging, and 141 clinicians (25.8%) felt they would not have time to discuss the risks and benefits of imaging with the patient. Furthermore, 149 (27.3%) clinicians...