



## How to Inform Vaccine Hesitant Individuals about the Potential Risks Associated with Vaccination

Tuhin Maity<sup>1</sup>, Ahmad von Schlegell<sup>2</sup>, Christopher J Longo<sup>3</sup>

1. Doctoral Student, DeGroote School of Business, McMaster University, [maityt@mcmaster.ca](mailto:maityt@mcmaster.ca)

2. Doctoral Student, DeGroote School of Business, McMaster University, [vonschas@mcmaster.ca](mailto:vonschas@mcmaster.ca)

3. Professor, DeGroote School of Business, McMaster University, [clongo@mcmaster.ca](mailto:clongo@mcmaster.ca)

### OVERVIEW

Despite their strong safety profiles, paradoxical fear about vaccine safety is the primary driver of vaccine hesitancy. We believe that vaccine-hesitant individuals inaccurately perceive the risk associated with vaccination due to the lack of appropriate benchmarks such as the risks associated with common daily activities or profession-related activities. If presented with appropriate safety comparison data, vaccine-hesitant individuals may reassess the potential risk associated with vaccination and change their minds.

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Vaccine hesitancy, primarily driven by a concern about the potential risk of side effects associated with immunization, has undeniably become a partisan political issue and is a major roadblock to achieving widespread vaccination coverage. Vaccine safety has been the predominant concern by both the general population and doctors in a number of studies (Dror et al., 2020). As such, we are interested in how to inform vaccine-hesitant individuals about the risk associated with vaccination.

Recently, we published a paper in the Canadian Journal of Public Health comparing the potential risk of serious side effects and fatalities associated with five common vaccines (flu, meningococcus, MMR, pneumonia, and Shingles) to the risk of serious side effects and fatalities associated with five everyday medications (ACE inhibitors, beta-2 adrenergic receptors, penicillin, proton-pump inhibitors, and HMG-CoA reductase inhibitors) (Maity et al., 2022). We showed that the vaccines, on average, have a 20- to 50-fold lower risk of serious side effects and deaths compared to the

common everyday medications included in the analysis. The latest safety data indicate that COVID-19 vaccines are no exceptions to this reduced risk (Public Health Agency of Canada, 2022). The question that puzzles us is, why do vaccines, despite their substantially stronger safety records, attract hesitancy and partisan debate while common medications do not? After all, both are pharmaceutical products.
















We take risks every day, unknowingly and knowingly. Most daily activities that we do have some potential risk of causing harm, even death. In most cases, we participate in those activities anyway because the benefits significantly outweigh the perceived risks. For example, in 2020, there were 6 traffic accident-related fatalities per 100,000 licensed drivers. Nevertheless, the potential risk associated with driving does not deter new drivers from driving on Canada's roads every year. The perceived benefit of driving overwhelmingly prevails for most individuals. To drive or not drive due to its risk has not become a partisan political issue. Professions, such as long-

haul truck driving, farming, construction, that are the backbones of the Canadian and global economies also involve taking elevated risks. Agriculture, for example, has a potential risk of fatal injuries about 25 per per 100,000 workers. However, the interpretation of the perceived risk associated with agriculture has not been politicized.

We believe that vaccine-hesitant individuals inaccurately perceive the risk associated with vaccination due to the lack of appropriate benchmarks.

Table 1 presents the observed risk associated with COVID-19 vaccinations estimated from real-world data benchmarked against the potential risk of common everyday activities or professions. The message is quite clear. The risk of fatalities or serious bodily harm associated with COVID-19 vaccinations is relatively low even when compared to everyday activities such as driving or cycling. Individuals that are vaccine-hesitant/resistant due to safety concerns should be presented with benchmarked data such as these for their risk reassessment. An understanding of the relative risks may lead to a change in their position on vaccine hesitancy/resistance.

**Table 1:** Benchmarking the Potential Risk Associated with Vaccination

	<i>Pharmaceuticals</i>			<i>Daily activities</i>				<i>Profession-related activities</i>		
	Covid-19 vaccines in Canada	Five common vaccine types	Five common medications	Driving	Cycling	Swimming	Walking (pedestrian)	Farming Agriculture	Truck and tractor operating	Construction
Serious side effects/accidents 100,000	25 	7 	132 	3931 	151 					
Associated fatalities per 100,000	1 	0.2 	11 	6 	1.3 	7 	0.86 	25.3 	25.8 	13.5 

Sources: COVID-19, until Feb 25, total vaccination 32,323,259 individuals (Public Health Agency of Canada, 2022); Five common vaccine and medicine types (Maity et al., 2022); Driving, assuming 26.5 million drivers in Canada ("Canadian Motor Vehicle Traffic Collision Statistics: 2019," 2022); Cycling, the reported value in the reference was per 100,000 population; we assumed 10% of the population cycles ("Circumstances Surrounding Cycling Fatalities in Canada, 2006 to 2017," 2022); Swimming, assumed 20% of the population swim ("Drowning Report 2016 Edition," 2022); Pedestrian, assumed 35 million population (Robertson, 2022); Profession-related activities, (U.S. Bureau of Labor Statistics, n.d.). Note: the circles are only approximate illustration of the magnitude of the associated risk.

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