

# Cannabis hypersensitivity prevalence and presentation – A survey-based study of an allergic adult population in a Toronto clinic at onset of Canadian legalization of recreational marijuana

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## Background

- *Cannabis sativa* is an herbaceous plant with many common uses, including in clothing, food and construction.
- Herbal preparations of *Cannabis sativa*, marijuana, are recreationally used, commonly by inhalation, ingestion or topical application.
- Hypersensitivity to cannabis has been reported, with symptoms ranging from mild to life-threatening, usually corresponding to route of exposure.
- Cannabis hypersensitivity may also confer cross-reactivity to many fruits and vegetables through non-specific lipid-transfer proteins.
- Recreational use of marijuana was legalized in Canada in Oct 2018, and Canadian exposure to marijuana is expected to increase.
- The epidemiology of exposure to marijuana, as well as the clinical presentation, severity, and clinical impact of cannabis hypersensitivity in Canadians remain understudied.

## Objective

To characterize marijuana exposure, and to explore the prevalence of symptoms attributable to cannabis hypersensitivity in a Toronto allergic population.

## Methods

- A self-administered questionnaire was developed with adaptation of questions from a previously published study.
- Questions were focused on obtaining information regarding marijuana use – route and degree of exposure, length of use, secondary exposures, and regarding any attributed symptoms, including respiratory, gastrointestinal, and dermatologic.
- Questionnaires were distributed to all adults presenting to a Toronto allergy clinic for 2 weeks immediately after legalization of recreational marijuana in Canada.
- Categorical variables were compared using chi-squared testing where appropriate

Date: \_\_\_\_\_ Sex:  M  F Age: \_\_\_\_\_

Recreational use of marijuana is now legalized in Canada. Allergy to marijuana, or cannabis, is increasingly recognized, but remains understudied. We are conducting this survey to better understand cannabis allergy and its impact on our patients. This questionnaire is purely voluntary. The feedback will be **anonymous**, aggregated, and **used only for research purposes**.

Would you like to fill this survey out?  Yes  No (If NO, please check and return to front office). Thank you.

Have you used Marijuana? <input type="checkbox"/> Yes <input type="checkbox"/> No	Do you grow Marijuana in your home? <input type="checkbox"/> Yes <input type="checkbox"/> No
Do you currently use Marijuana? <input type="checkbox"/> Yes <input type="checkbox"/> No	Do you have a prescription for medical Marijuana? <input type="checkbox"/> Yes <input type="checkbox"/> No
How long have you been using Marijuana? _____ months _____ years	Do you work in Marijuana production or distribution? <input type="checkbox"/> Yes <input type="checkbox"/> No Please specify: _____
How do you use Marijuana? <input type="checkbox"/> Smoke in cigarette or pipe <input type="checkbox"/> Vaporizer <input type="checkbox"/> Orally (e.g. brownies, edibles) <input type="checkbox"/> Concentrates (e.g. wax) <input type="checkbox"/> Other: _____	Are you exposed to Marijuana in any other ways? Please specify: _____
Have you used topical cannabidiol (CBD)? <input type="checkbox"/> Yes <input type="checkbox"/> No Any reactions? _____	How greatly do allergic effects of Marijuana use interfere with your life? (Please circle) Very severely Severely Moderately A little Not at all
How often do you use Marijuana? _____ times per _____ (day/week/month)	Do you use tobacco (cigarettes)? <input type="checkbox"/> Yes <input type="checkbox"/> No How often? _____
Do you have any negative effects from Marijuana use or contact? <input type="checkbox"/> Shortness of breath <input type="checkbox"/> Wheezing <input type="checkbox"/> Cough <input type="checkbox"/> Eyes (specify): _____ <input type="checkbox"/> Sneeze <input type="checkbox"/> Skin reaction Please circle: RASH DERMATITIS HIVES <input type="checkbox"/> Abdominal cramps <input type="checkbox"/> Nausea and vomiting <input type="checkbox"/> Other: _____	Do you have any food allergies? <input type="checkbox"/> Yes <input type="checkbox"/> No Which ones? <input type="checkbox"/> Hempseed <input type="checkbox"/> Peach <input type="checkbox"/> Apple <input type="checkbox"/> Cherry <input type="checkbox"/> Tangerine <input type="checkbox"/> Orange <input type="checkbox"/> Nuts <input type="checkbox"/> Tomato <input type="checkbox"/> Banana <input type="checkbox"/> Wheat <input type="checkbox"/> Wine <input type="checkbox"/> Beer <input type="checkbox"/> Other: _____ Reaction? _____
Are the effects connected to how you use Marijuana? How? <input type="checkbox"/> Yes: _____ <input type="checkbox"/> No	Do you have any other allergies? <input type="checkbox"/> Environmental <input type="checkbox"/> Contact <input type="checkbox"/> Latex <input type="checkbox"/> Other To what allergens? _____ Reaction? _____
Does the reaction happen every time with Marijuana use? <input type="checkbox"/> Yes <input type="checkbox"/> No If not, how often? _____	Thank you for your participation! For office use: Skin test <input type="checkbox"/> Pos (___mm) <input type="checkbox"/> Neg

Figure 1. Self-administered questionnaire distributed to participants.

## Results

- All 179 distributed questionnaires were completed
- 59 (33%) male; mean age 42.8 years
- 46 (26%) participants report active marijuana use, compared to 16.7% of Canadians reported by Statistics Canada

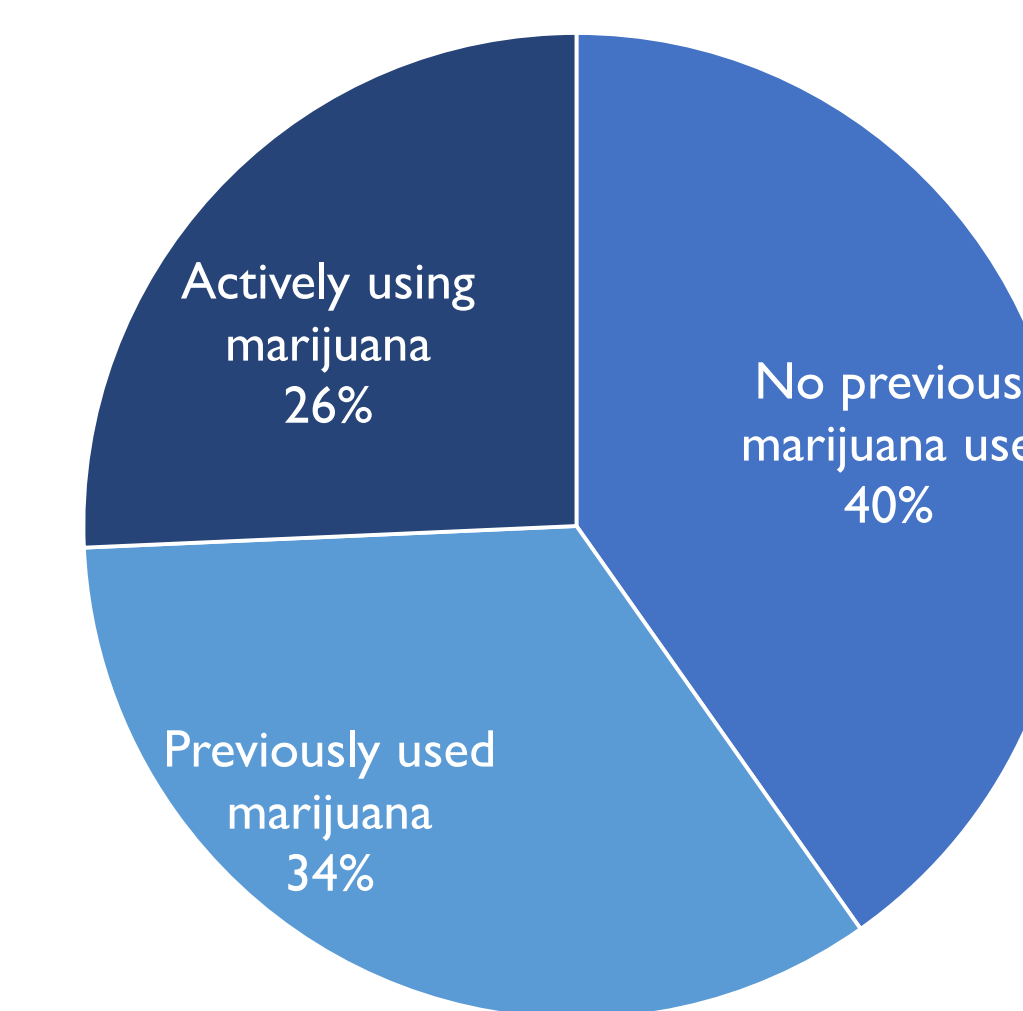


Figure 2. Proportion of participants with marijuana use.

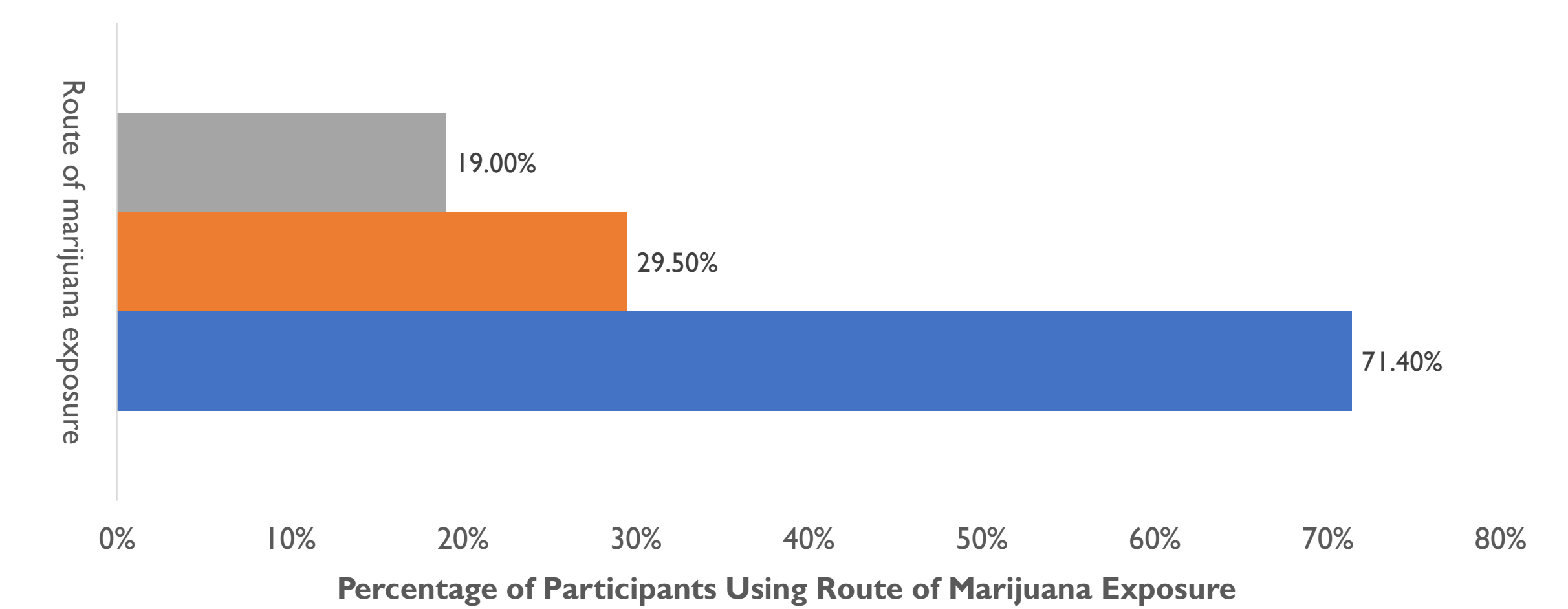


Figure 3. Route of marijuana exposure (Grey – Topical application; Orange – Ingestion; Blue – Inhalation) of all participants with previous and active marijuana consumption.

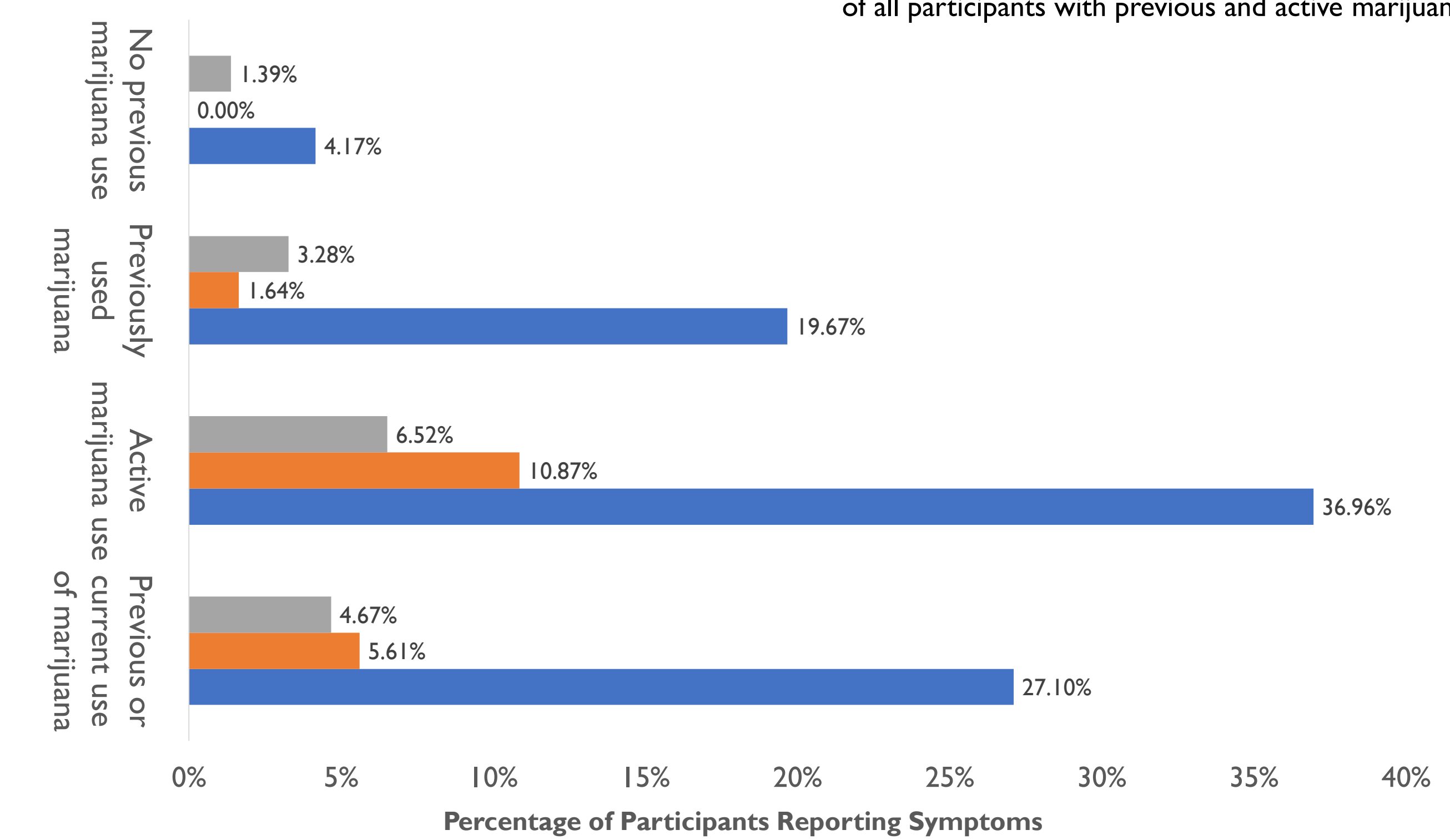


Figure 4. Symptoms (Grey – Gastrointestinal; Orange – Dermatologic; Blue – Respiratory and ocular) reported by participants with marijuana exposure.

## Conclusion

- The majority of our study participants have used marijuana, suggesting that many Canadians may have also previously had marijuana exposure.
- A large proportion of marijuana users describe symptoms attributable to cannabis hypersensitivity with exposure.
- Participants continue to use marijuana despite symptoms, suggesting mild severity.
- Future directions include evaluation of sensitization by standardized skin-prick or specific IgE testing, and repeated data collection to monitor trends.