

# Attribute level effect on measurement of preferences for lung cancer treatment – results from a discrete choice experiment

Ellen M. Janssen PhD<sup>1</sup>, Upal Basu Roy PhD MPH<sup>2</sup>,  
Andrea Ferris MBA<sup>2</sup>, John F.P. Bridges PhD<sup>3</sup>

1 ICON Plc, 2 LUNgevity Foundation, 3 The Ohio State University

## Introduction

- Lung cancer is the most commonly diagnosed cancer in the US; in 2015 an estimated 221,200 new lung cancer diagnoses were predicted which represents 13% of all cancer diagnoses (1)
- It is estimated that 415,707 people in the United States are lung cancer patients or survivors (2)
- At 17.8%, the overall five-year survival rate for lung cancer is lower than for other types of cancer.
- Novel treatments including treatments targeting genetic mutations (3, 4), immunotherapy (5, 6) and combination therapies (7), are improving
- options for lung cancer patients (5)
- We sought to measure preferences for lung cancer treatment and to explore the effect of different levels of survival benefit on preferences.

## Methods

- People diagnosed with lung cancer or their caregivers completed a pen-and paper or online discrete-choice experiment.
- Profiles varied across five attributes with three possible levels (progression-free survival (PFS), short-term effects, long-term effects, late-onset effects, mode of administration).
- There were two survey versions;
  - Version 1 - 6/12/18 months of PFS
  - Version 2 - 12/18/24 months of PFS.
  - Versions were otherwise identical.
- For both versions, a D-efficient design divided 27 choice-tasks among 3 blocks; each participant completed 9 choice-tasks.
  - Figure 1 presents a sample choice task
- Results were analyzed using conditional logit and effects coding.
- We analyzed differences between responses for version 1 and version 2 by:
  - Examining proportion of respondents that displayed non-compensatory preferences
  - Examining differences in preference estimates between attribute levels
  - Differences were tested using t-tests

**Figure 1 – Sample DCE choice task**

Task 1 out of 10: Consider that you are newly diagnosed with lung cancer. Which drug would you prefer to take? Would you take it if it was available?

Attributes	Drug A	Drug B
Progression free survival	18 months	24 months
Short-term side effects	Moderate	Severe
Long-term side effects	Mild	None
Risk of late-onset side effects	10% (10 out of 100)	30% (30 out of 100)
Mode of administration	Pills daily without food	Pills daily anytime

Which drug do you prefer?  Drug A  Drug B

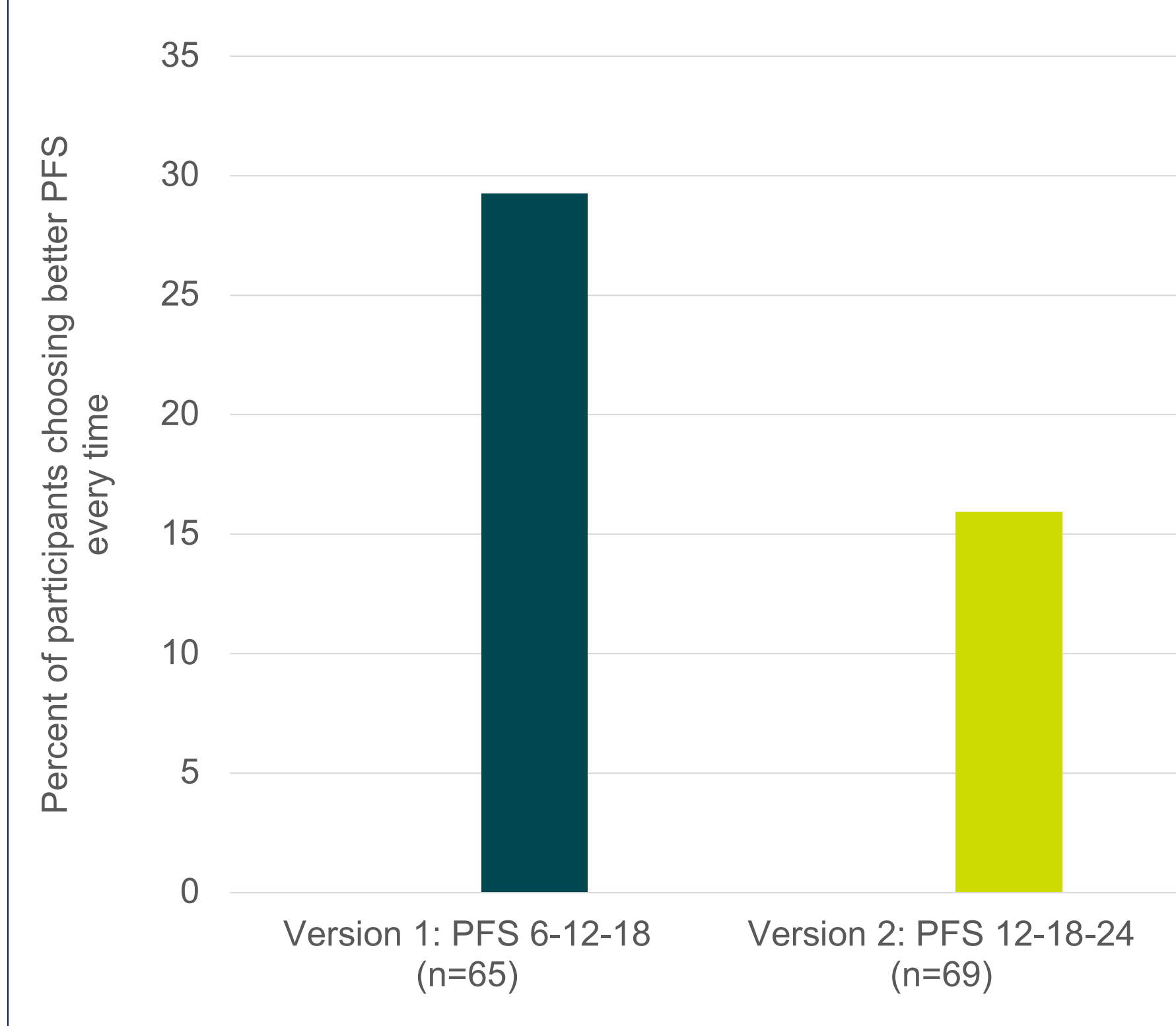
## Results

65 participants completed version 1  
69 completed version 2.

### Non-compensatory preferences:

- In version 1, 29% of participants always chose the treatment profile with longer PFS. In version 2, 16% did ( $p = 0.06$ ).

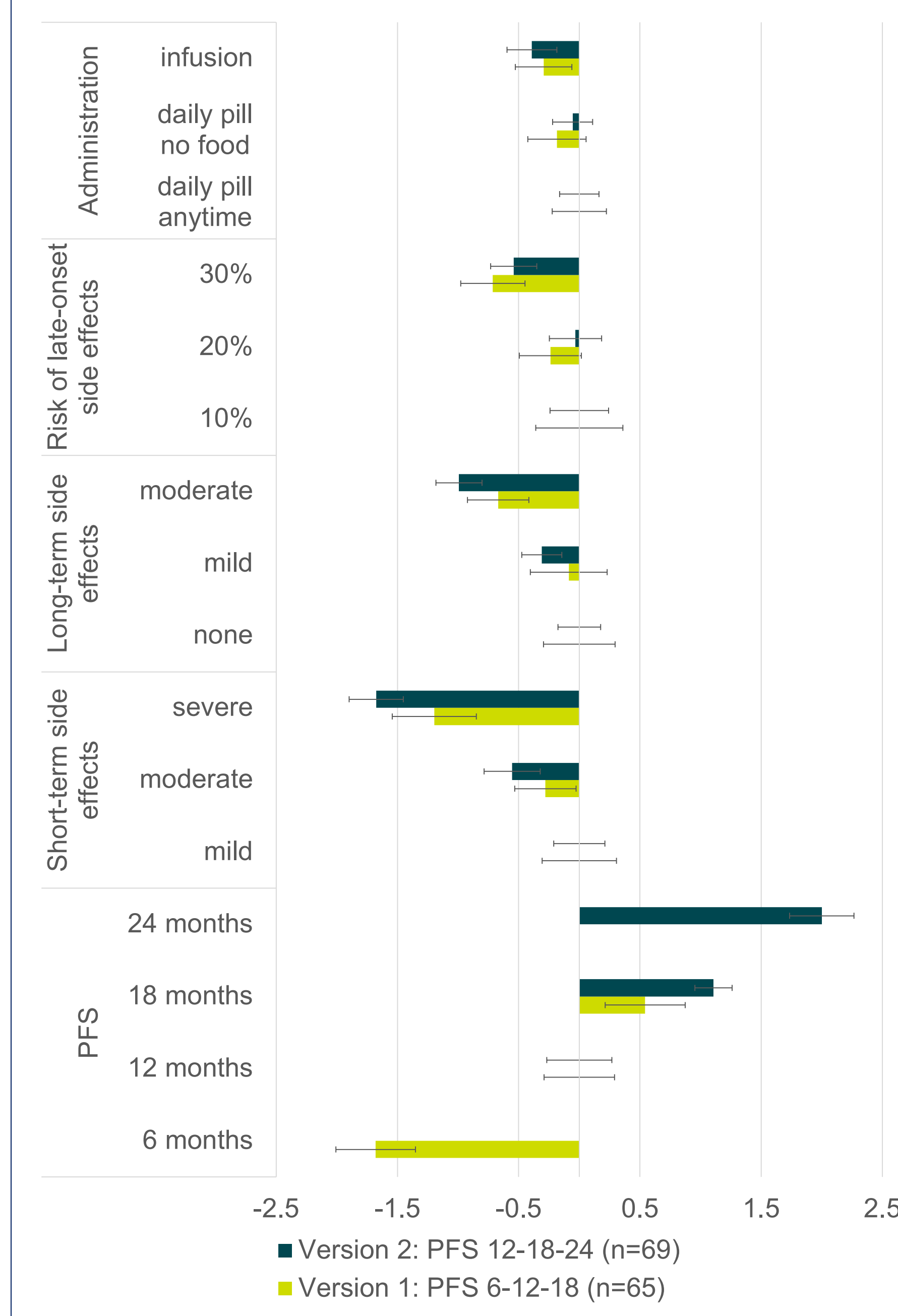
**Figure 2 – Frequency of compensatory preferences by survey version**



### Differences in preference estimates:

- In version 1, the difference in preference estimate between the lowest level of PFS and middle level was larger (1.7, SE: 0.2) than between the middle and the highest level (0.5, SE: 0.2) ( $p < 0.001$ ).
- In version 2, the difference between the lowest/middle preference estimate (1.1, SE: 0.2) and middle/highest preference estimate for PFS (0.89, SE: 0.1) was not statistically significant ( $p = 0.27$ ). (Figure 3)

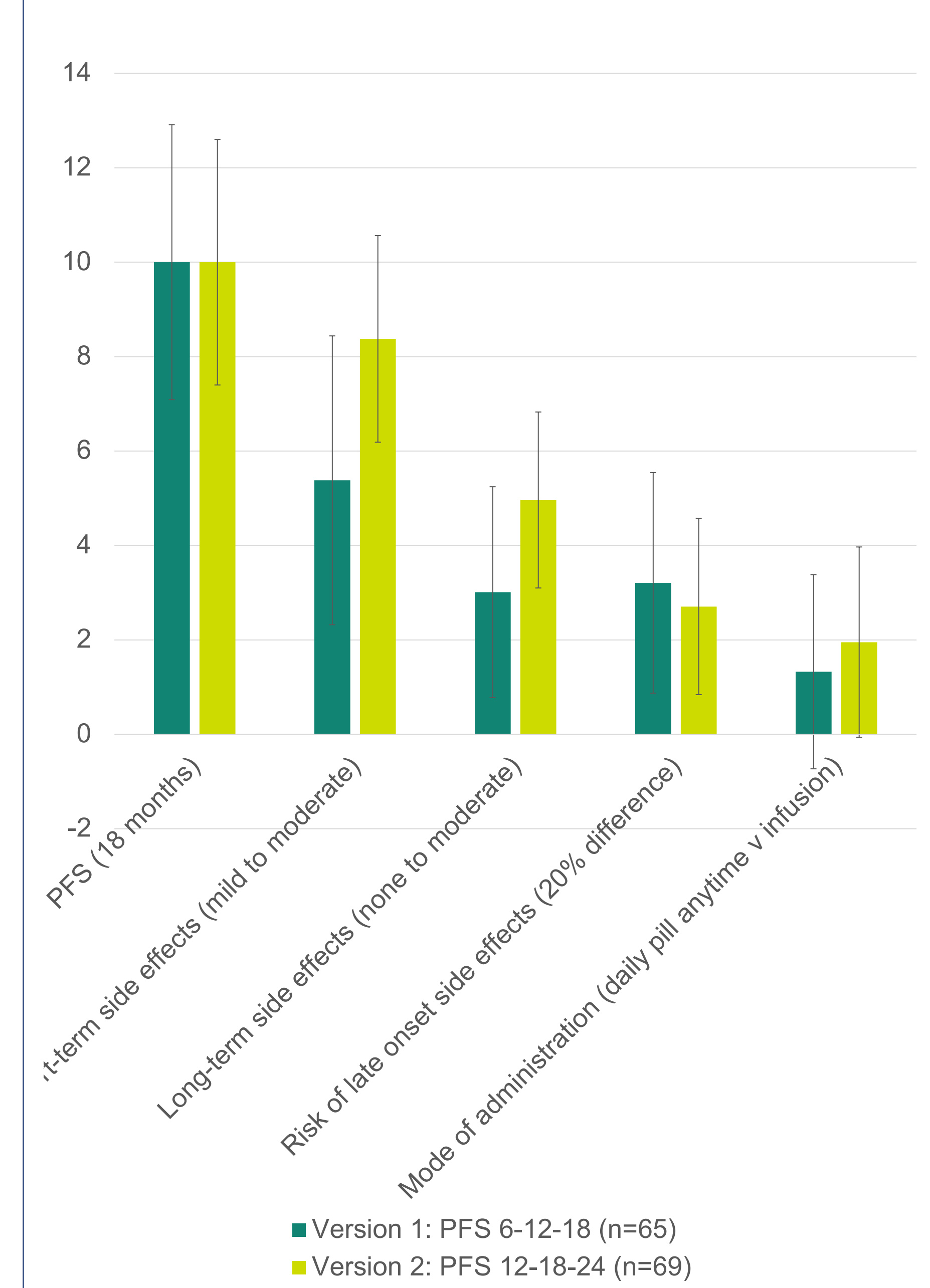
**Figure 3 – Preference results by survey version**



## Results

Version 2 resulted in higher relative attribute importance than version 1 for short-term effects ( $p = 0.02$ ) and for long-term effects ( $p = 0.04$ ).

**Figure 4 – Standardized relative attribute importance**



## Conclusion

- Higher levels of PFS were associated with lower rates of non-trading, decreased diminishing marginal returns on PFS, and more pronounced preferences for the other attributes.
- Higher PFS levels might have incentivized participants to make more tradeoffs as these PFS levels are associated with more innovative lung cancer treatments instead of standard of care.

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