

## Background

### Choosing Wisely

- Choosing Wisely is a campaign to help clinicians and patients engage in conversations about unnecessary tests and treatments
- Initially launched in 2012 by ABIM Foundation in the US, Choosing Wisely Canada launched in 2014 (UK, Australia have followed in 2015)
- National societies asked to develop lists of "Five Things Clinicians and Patients Should Question."
- In Canada, 175 recommendations have been made so far.
- Patient educational pamphlets created by Consumer Reports to help physicians engage their patients – adapted for Canada
- "Don't do imaging tests for low back pain unless red flags are present" was No. 1 on the list by Canadian Association of Radiologists and College of Family Physicians

### Imaging Tests for Low Back Pain (LBP)

- Systematic review in 2009 concluded lumbar imaging for low back pain without indications of serious underlying conditions (red flags) does not improve clinical outcomes, but can cause harms (Chou et al. Lancet 2009)
  - exposure to radiation, unnecessary surgery
  - unnecessary worry from abnormalities that have no clinical impact
- Despite this, many patients still receive imaging tests:
  - a US study found 1 in 3 received imaging with 28 days, 2 in 5 within 1 year, mostly plain radiography, but also significant amount of CT and MRI
- Previous studies have shown patients drive demand – they think imaging tests are useful and ask their doctors for it.
- Limited evidence from Canada, and unclear the potential impact Choosing Wisely will have on imaging test utilization.

## Objectives

- To estimate the utilization of unnecessary imaging tests for LBP in Canada
- Understand baseline behavioural intentions towards future imaging tests, associated knowledge and attitudes
- Determine the potential effect of the Choosing Wisely patient pamphlet on future intentions, knowledge and beliefs
- Calculate if investing in a mass media Choosing Wisely campaign is a good use of health care resources?

## Methods

- Participants members of Market research panel invited to a web survey in English and French
- Quota sampling to obtain adults generally representative of the Canadian population

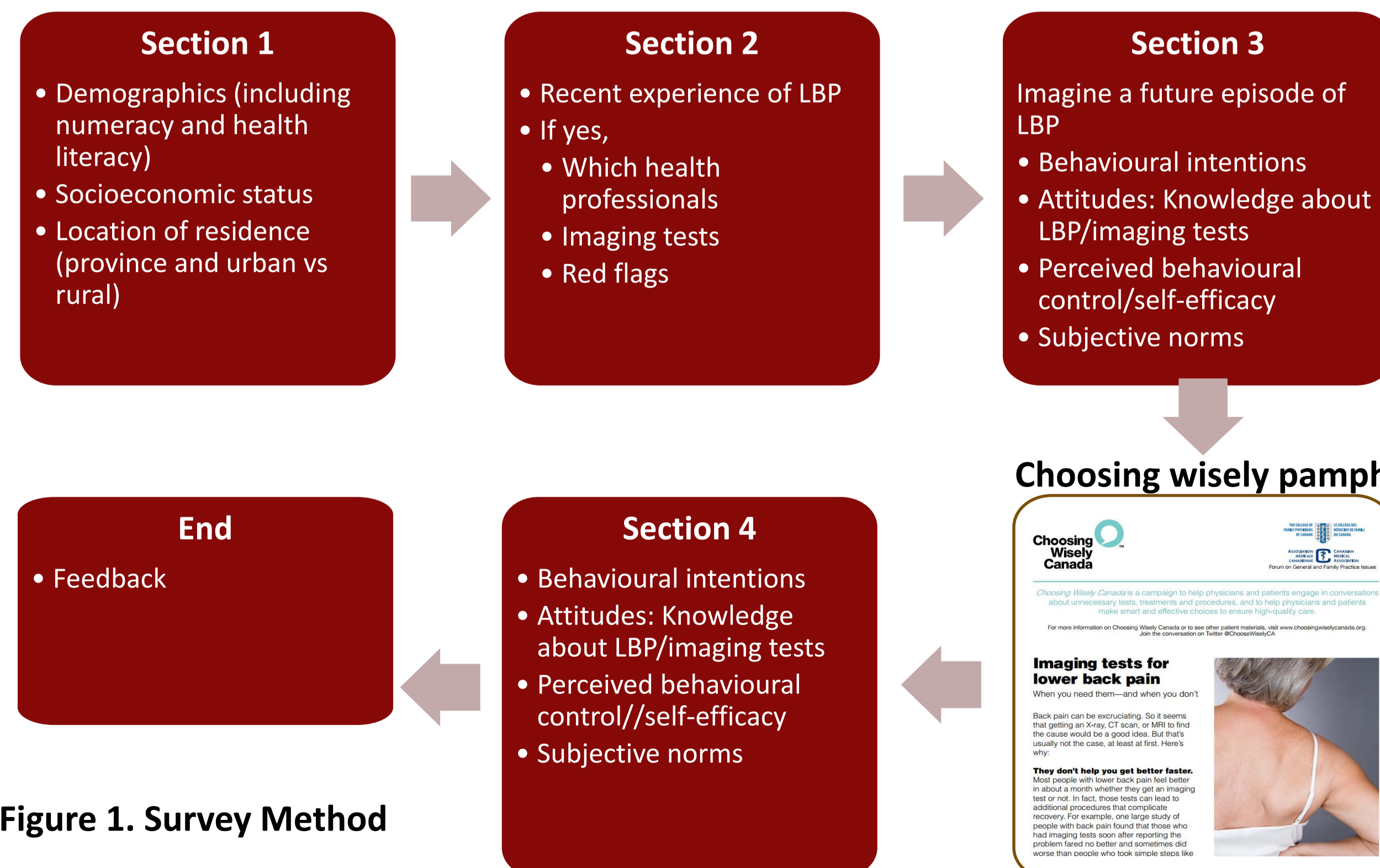


Figure 1. Survey Method

Table 1. Survey respondent demographics

|                                                     | Completers (n=2985) | Non Completers (n=401) |
|-----------------------------------------------------|---------------------|------------------------|
| <b>Age, n (%)</b>                                   |                     |                        |
| <20                                                 | 36 (1.2)            | 3 (0.7)                |
| 20-29                                               | 515 (17.3)          | 57 (14.2)              |
| 30-39                                               | 490 (16.4)          | 42 (10.5)              |
| 40-49                                               | 513 (17.2)          | 56 (14.0)              |
| 50-59                                               | 597 (20.0)          | 79 (19.7)              |
| 60-69                                               | 429 (14.4)          | 64 (16.0)              |
| 70-79                                               | 248 (8.3)           | 43 (10.7)              |
| 80 or older                                         | 157 (5.3)           | 57 (14.2)              |
| <b>% Female, n (%)</b>                              | 1499 (50.2)         | 231 (57.6)             |
| <b>Language, n English(%)</b>                       | 2801 (93.8)         | 373 (90.5)             |
| <b>Ethnicity, n(%)</b>                              |                     |                        |
| Aboriginal (e.g. Cree, Inuit, Métis, etc.)          | 34 (1.1)            | 4 (1.0)                |
| African (e.g. Haitian, Nigerian, etc.)              | 33 (1.1)            | 0 (0.0)                |
| Asian (e.g. Chinese, Filipino, Japanese, etc.)      | 413 (13.8)          | 31 (8.0)               |
| Caucasian (e.g. Canadian, German, Irish, etc.)      | 2189 (73.3)         | 272 (70.3)             |
| Hispanic, Latino or Spanish (e.g. Mexican etc.)     | 25 (0.8)            | 1 (0.3)                |
| South Asian (e.g. East Indian, Pakistani, etc.)     | 143 (4.8)           | 25 (6.5)               |
| Other/Prefer not to answer                          | 148 (5.0)           | 54 (14.0)              |
| <b>Location, n (%)</b>                              |                     |                        |
| Alberta                                             | 482 (16.2)          | 52 (13.0)              |
| British Columbia                                    | 628 (21.0)          | 84 (21.0)              |
| Ontario                                             | 1591 (53.3)         | 219 (54.8)             |
| Quebec                                              | 185 (6.2)           | 37 (9.3)               |
| Saskatchewan                                        | 97 (3.3)            | 8 (2.0)                |
| <b>Area of residence, n(%)</b>                      |                     |                        |
| Rural area (population of <1k)                      | 182 (6.1)           | 18 (4.4)               |
| Small population centre (population >1k and <30k)   | 384 (12.9)          | 44 (10.7)              |
| Medium population centre (population >30k <100k)    | 526 (17.6)          | 64 (15.6)              |
| Large urban population centre (population of >100k) | 1893 (63.4)         | 168 (40.9)             |
| Missing                                             | 0 (0)               | 116 (28.2)             |
| <b>Highest education level, n(%)</b>                |                     |                        |
| Less than high school                               | 78 (2.6)            | 7 (1.9)                |
| High school graduate                                | 423 (14.2)          | 70 (18.8)              |
| Some post-secondary                                 | 556 (18.6)          | 95 (25.5)              |
| Post-secondary graduate                             | 1465 (49.1)         | 145 (38.9)             |
| Greater than post-secondary                         | 463 (15.5)          | 56 (15.0)              |
| <b>Employment status, n (%)</b>                     |                     |                        |
| Employed, full time                                 | 1550 (51.9)         | 165 (43.0)             |
| Employed, part time                                 | 312 (10.5)          | 39 (10.2)              |
| Unemployed                                          | 179 (6.0)           | 28 (7.3)               |
| Student                                             | 114 (3.8)           | 4 (1.0)                |
| Retired                                             | 754 (25.3)          | 130 (33.9)             |
| Other                                               | 76 (2.5)            | 18 (4.7)               |
| <b>Household income, n(%)</b>                       |                     |                        |
| Less than \$30,000                                  | 341 (11.4)          | 58 (14.5)              |
| \$30,000 to \$59,999                                | 736 (24.7)          | 77 (19.2)              |
| \$60,000 to \$99,999                                | 823 (27.6)          | 93 (23.2)              |
| More than \$100,000                                 | 695 (23.3)          | 72 (18.0)              |
| Prefer not to disclose                              | 390 (13.1)          | 101 (25.2)             |
| <b>Health literacy score, mean (sd)</b>             | 2.14 (2.15)         | -                      |
| <b>Subjective numeracy scale score, mean (sd)</b>   | 13.78 (3.41)        | 13.14 (3.60)           |

Figure 2. Flow diagram of respondents

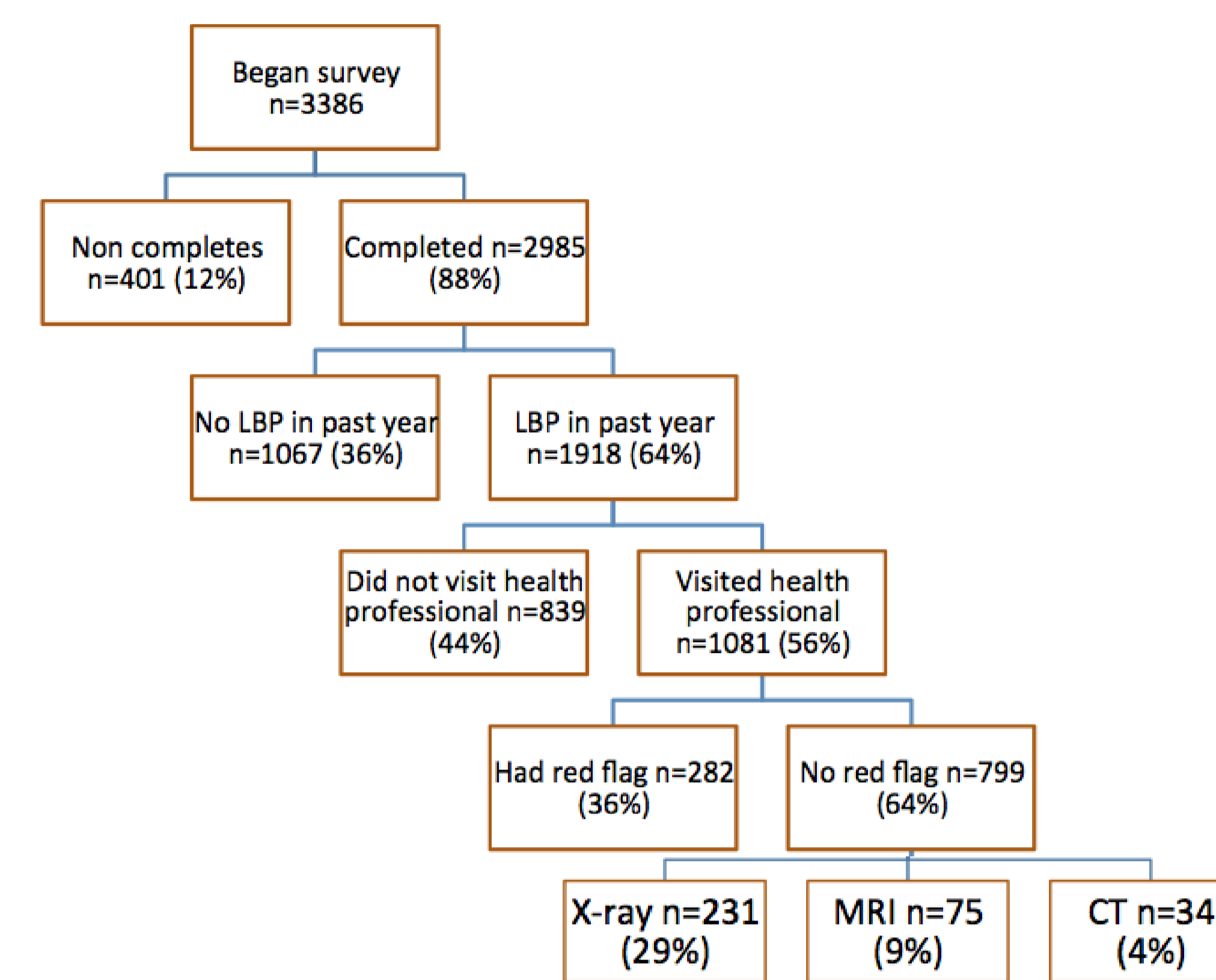


Table 2. Survey responses

|                                                                                              | Overall (n=2985) | People with recent episode of LBP (<1 year) (n=1918) | People who did not have imaging test (n=336) | People who did not have imaging test (n=1582) | People with no recent episode of LBP (n=1067) |
|----------------------------------------------------------------------------------------------|------------------|------------------------------------------------------|----------------------------------------------|-----------------------------------------------|-----------------------------------------------|
| <b>I want to be referred for an imaging test for my LBP. N agree (%)</b>                     |                  |                                                      |                                              |                                               |                                               |
| pre                                                                                          | 1165 (39.0)      | 214 (63.7)                                           | 518 (32.7)                                   | 433 (40.6)                                    |                                               |
| post                                                                                         | 700 (23.5)       | 131 (39.0)                                           | 321 (20.3)                                   | 248 (23.2)                                    |                                               |
| <b>I expect to be referred to an imaging test for my LBP. N agree (%)</b>                    |                  |                                                      |                                              |                                               |                                               |
| pre                                                                                          | 1098 (36.8)      | 202 (60.1)                                           | 468 (29.6)                                   | 428 (40.1)                                    |                                               |
| post                                                                                         | 656 (22.0)       | 116 (34.5)                                           | 301 (19.0)                                   | 239 (22.4)                                    |                                               |
| <b>I think that having an imaging test done is a positive thing for myself. N agree (%)</b>  |                  |                                                      |                                              |                                               |                                               |
| pre                                                                                          | 1580 (52.9)      | 261 (77.7)                                           | 769 (48.6)                                   | 550 (51.6)                                    |                                               |
| post                                                                                         | 898 (30.1)       | 161 (47.9)                                           | 436 (27.6)                                   | 301 (28.2)                                    |                                               |
| <b>Back beliefs Questionnaire. Overall score, mean (SD)</b>                                  |                  |                                                      |                                              |                                               |                                               |
| pre                                                                                          | 25.75 (4.61)     | 25.04 (4.85)                                         | 25.60 (4.58)                                 | 26.20 (4.55)                                  |                                               |
| post                                                                                         | 26.67 (4.55)     | 25.97 (4.88)                                         | 26.53 (4.50)                                 | 27.10 (4.48)                                  |                                               |
| <b>Back trouble must be rested. Disagree/strongly disagree, n(%)</b>                         |                  |                                                      |                                              |                                               |                                               |
| pre                                                                                          | 442 (14.9)       | 56 (16.8)                                            | 235 (14.9)                                   | 151 (14.3)                                    |                                               |
| post                                                                                         | 899 (30.3)       | 109 (32.7)                                           | 457 (29.1)                                   | 333 (31.4)                                    |                                               |
| <b>There is no real treatment for back trouble. Disagree/strongly disagree, n(%)</b>         |                  |                                                      |                                              |                                               |                                               |
| pre                                                                                          | 1214 (40.8)      | 131 (39.2)                                           | 629 (39.8)                                   | 454 (42.7)                                    |                                               |
| post                                                                                         | 1599 (53.9)      | 172 (51.2)                                           | 859 (54.7)                                   | 568 (53.5)                                    |                                               |
| <b>Imaging test for LBP questionnaire. Mean (SD)</b>                                         |                  |                                                      |                                              |                                               |                                               |
| pre                                                                                          | 17.15 (2.22)     | 17.14 (2.28)                                         | 17.12 (2.24)                                 | 17.20 (2.16)                                  |                                               |
| post                                                                                         | 20.00 (3.37)     | 20.01 (3.49)                                         | 20.08 (3.31)                                 | 19.89 (3.40)                                  |                                               |
| <b>Imaging tests can help improve your lower back pain. Disagree/strongly disagree, n(%)</b> |                  |                                                      |                                              |                                               |                                               |
| pre                                                                                          | 969 (32.6)       | 168 (50.2)                                           | 472 (30.0)                                   | 329 (31.0)                                    |                                               |
| post                                                                                         | 1361 (46.1)      | 164 (49.6)                                           | 743 (47.5)                                   | 454 (42.9)                                    |                                               |
| <b>Imaging tests can increase your risk of cancer. Agree/strongly agree, n(%)</b>            |                  |                                                      |                                              |                                               |                                               |
| pre                                                                                          | 514 (17.3)       | 57 (17.0)                                            | 279 (17.7)                                   | 178 (16.9)                                    |                                               |
| post                                                                                         | 1490 (50.2)      | 188 (56.0)                                           | 794 (50.5)                                   | 508 (47.9)                                    |                                               |

## Results

### Respondents

- 3386 began the survey, 2985 completed all questions and included in analysis
- Demographics fairly representative of adult Canadian general population
- About 1 in 3 of the sample (n=1081) had LBP in the past year and visited a health professional
- About 1 in 3 of respondents (n=336) who visited a health professional with LBP had an imaging tests (mostly x-ray, but considerable use of MRI and CT)

### Behavioural responses

- 37% and 39% of all respondents said they would want or expect an imaging test for a future episode of LBP (>60% in respondents who had previous an imaging test for LBP in the past year)
- Poor knowledge of effective management of LBP and effectiveness and harms of imaging tests

### Impact of Choosing Wisely pamphlet

- Respondents who wanted or expected an imaging test reduced from 39% to 24% (p<0.001) and from 37% to 22% (p<0.001).
- Similar large and statistically significant changes in knowledge and beliefs

### Economic consequences

- Simple extrapolation implies In Canada each year for LBP there are approximately:
  - 2 million inappropriate x-rays
  - 700K inappropriate MRIs
  - 300K inappropriate CT scans
  - Costing \$300-600 million per year
- Assuming everyone viewed pamphlets and intentions result in approximately 30% change in actual health behaviour (Sheeran P et al Eur Rev Soc Psychol. 2002) it conservatively implies:
  - Potential reductions of 90,000 x-rays, 30,000 MRI and 14,000 CT scans
  - \$15-\$30 million would be saved each year
  - Not actual cost savings, but reduced wait times
- Further analysis will demonstrate which demographic groups will be more efficient to target, over 60, people who have had previous x-ray for LBP?

## Discussion

### Limitations

- Self-reported outcomes
- Red flags too high?
- Representativeness of sample
- Intentions ≠ actual behavior
- Particularly if information is forgotten
- Unclear of physicians role in consultation

### Strengths

- Provides outcomes not possible to collect well in admin data
- Enables comparisons across demographics and geography
- Gives us a sample we can follow up next year who:
  - wanted a future imaging test
  - have seen Choosing Wisely pamphlet

## Conclusions and next steps

- Utilization of inappropriate imaging tests for LBP in Canada is substantial
- Individuals who have had imaging tests are not learning that they have not benefited their treatment and caused potential harms – want it again.
- Choosing Wisely campaign could help reduce patient demand for imaging, but will depend on a) whether individuals are exposed to the information at the right time, b) whether intentions lead to actual behaviour episode
- Follow up of this sample is planned to observe their actual behaviour