The number of candidates that voters are allowed to rank can have a huge effect on IRV election outcomes.

Given (almost) any length \( k - 1 \) sequence of \( k \) candidates, we can construct voter preferences so that the IRV winners at ballot lengths 1, ..., \( k-1 \) follow the given sequence.

**Example.** \( k = 4 \) candidates, winner sequence ABC:

| Ballot length 1 | Ballot length 2 | Ballot length 3 |
|-----------------|-----------------|-----------------|
| 2 5 6 3         | 2 5 6 3         | 2 5 6 3         |
| A D C B         | A D C B         | A D C B         |
| A C D B         | A C D B         | A C D B         |
| A C D B         | A C D B         | A C D B         |

A wins B wins C wins

Our constructions use only \( \Theta(k^2) \) voters to achieve any winner sequence, which is tight for \( k - 1 \) different winners.

Real-world IRV elections use various ballot lengths:

- Ballot length 3
- Ballot length 5
- Unlimited

We truncate ballots in 168 real-world elections: 25% of them have multiple winners as ballot length varies.