Improving Data Collection for Prescribed Medicines Using an Enhanced Lookup Tool

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What is the MCBS?

- The Medicare Current Beneficiary Survey (MCBS) is a continuous, multipurpose survey of a nationally representative sample of the Medicare population, conducted by the Centers for Medicare & Medicaid Services (CMS) through a contract with NORC at the University of Chicago.
- The MCBS collects data from Medicare beneficiaries at three points per year for four consecutive years.
  - Beneficiaries living in both community and facility settings.
- The survey covers many topics including health care utilization and expenditures, all sources of health insurance coverage, and health status and functioning.
  - Health care utilization includes recording all purchases of medicines prescribed and filled.
- MCBS data are made available via two annual releases of Limited Data Set (LDS) files that contain roughly 40 linkable data sets and over 2,000 variables.
- A public use file is also available.

Summary

- As part of efforts to improve and modernize the Medicare Current Beneficiary Survey Community interview, NORC and CMS designed and implemented a revised protocol and lookup tool for recording prescribed medicine data.
- The revised lookup integrates a high-quality data source into the CAPI questionnaire to structure entry of prescribed medicine data.
- The goals of the new lookup are to:
  - Increase data quality
  - Decrease respondent and interviewer burden
  - Reduce post-survey cleaning and matching of medicine data
- Revised lookup was implemented in the Community survey in Fall 2017
  - Data for this presentation compare preliminary results from Fall 2017 with previous rounds of data collection
  - Does not apply to respondents living in Facilities

Motivation

- Medicine data are challenging for data entry:
  - Unusual names
  - Frequent and varying abbreviations
  - Lack of standard notation on labels
- Extensive post-processing and editing of all survey data
  - Includes matching survey-reported prescribed medicines to a standard commercial list, which requires manual review
  - Exact matches to the list increase data quality and usability and reduce the need for manual data review and editing
- Selecting from a structured lookup greatly increases the chances of an exact match to the source list.
  - Incorporate three key data points into the lookup: name, form, and strength

Source List Features

- **Large**: more than 250,000 records
- **Complex**: multiple combinations of name, strength, form, etc.
- **Dynamic**: updated frequently

Design Challenges

Encouraging Use in Field

- To ensure interviewers use the lookup:
  - User-friendly interface
  - High likelihood of finding a medicine
  - Flexibility for variety of situations
- Buy-in and feedback at several stages from interviewers:
  - Interviewer focus groups
  - Early demonstrations for field staff
  - Feasibility test using prototype

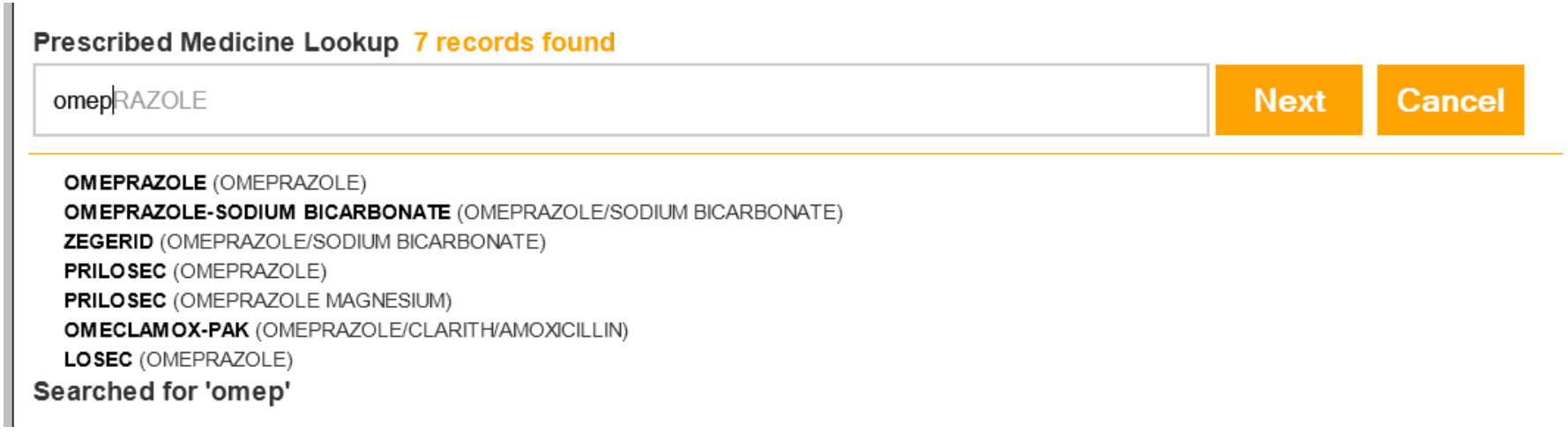
Integrating into a Complex Instrument

- Medicine data collected in 9 sections throughout the questionnaire
- Additional changes in protocol and question flow, including new data points collected
- Iterative, rapid-cycle prototype development followed by carefully planned implementation and testing
  - Small-scale implementation and full test prior to full implementation in all 9 sections

Key Design Features

Programming Innovations

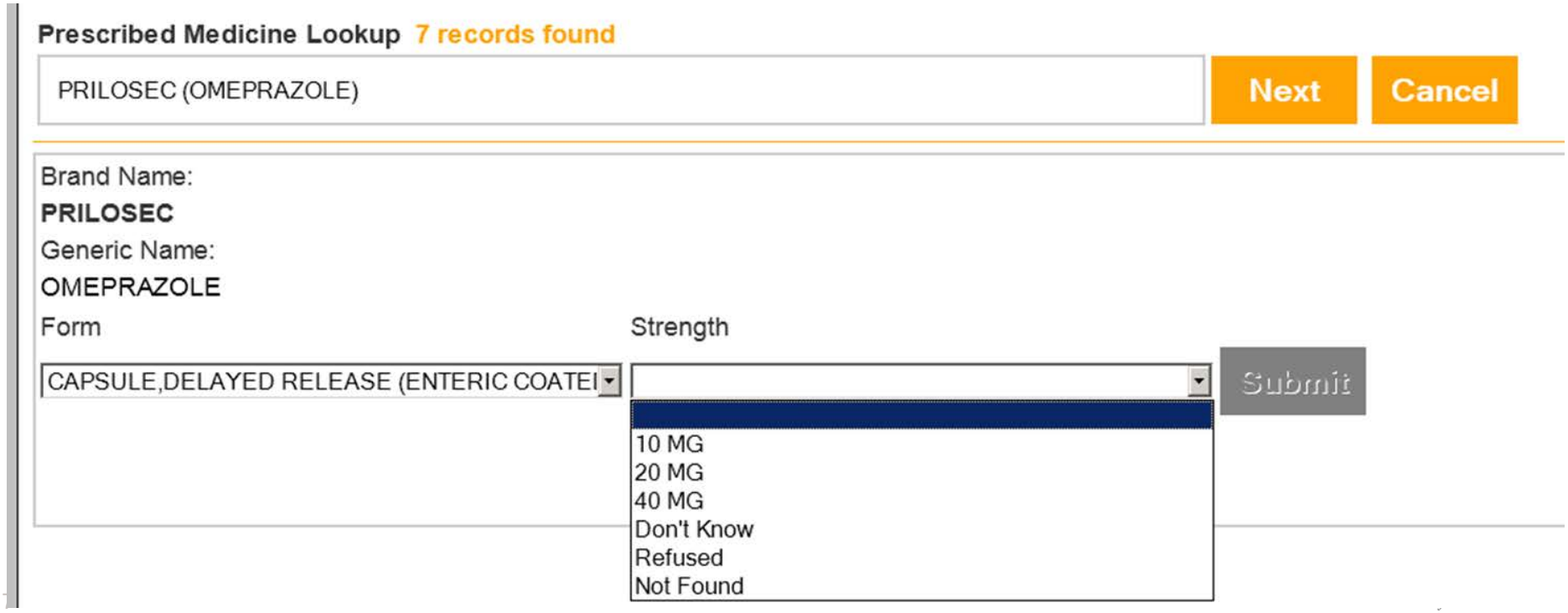
- Programmed using **open-source JavaScript** code library and embedded in questionnaire software
  - Similar functionality could be used in other survey platforms that support HTML and JavaScript
- **Type-ahead functionality** helps avoid spelling errors for long and complex medicine names
  - Inspired by medicine lookup apps on industry websites
- Search by **brand or generic medicine name** for ease of use
- **Weighted results list** helps to reduce scrolling
  - The most common medicines appear at the top of the list



Key Design Features

Dependent Lookup

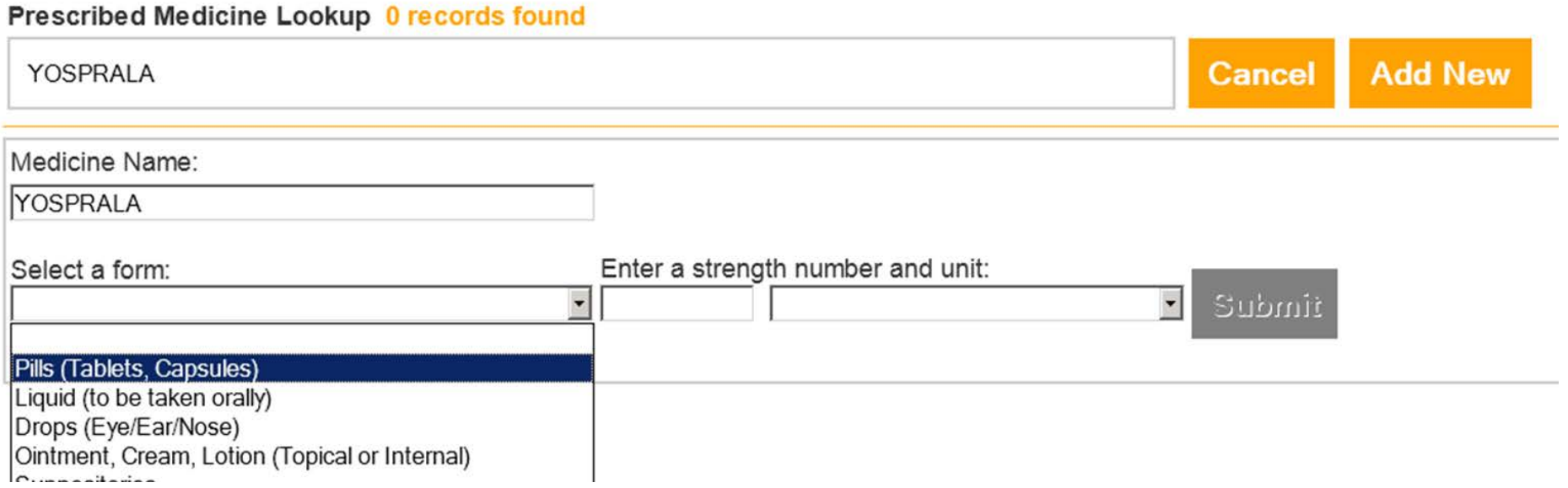
- Once name is selected, move on to form and strength, which can be selected in any order
- Both form and strength dropdown menus are dynamic and dependent on medicine name: limited to only those forms and strengths associated with the medicine name selected
- Reduces potential for interviewer error from selecting an invalid form or strength

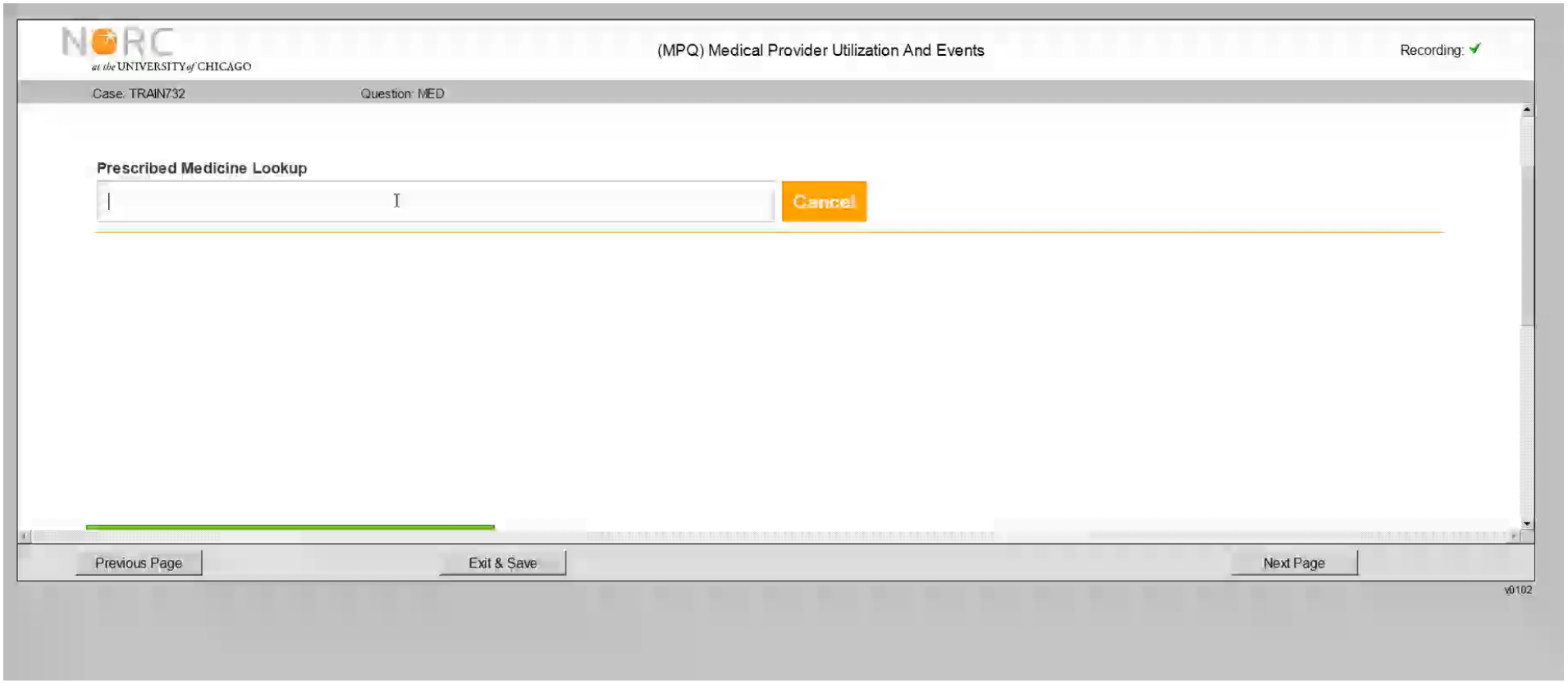


Key Design Features

Flexibility

- The lookup is designed to be flexible enough to accommodate entries that are not exact matches to the source list for a variety of reasons:
  - Form or strength is not standard
  - Respondent does not know the information
  - Medicine name, strength, or form is not found in the list
- Interviewers can still use the lookup tool to record medicines that do not match to the list

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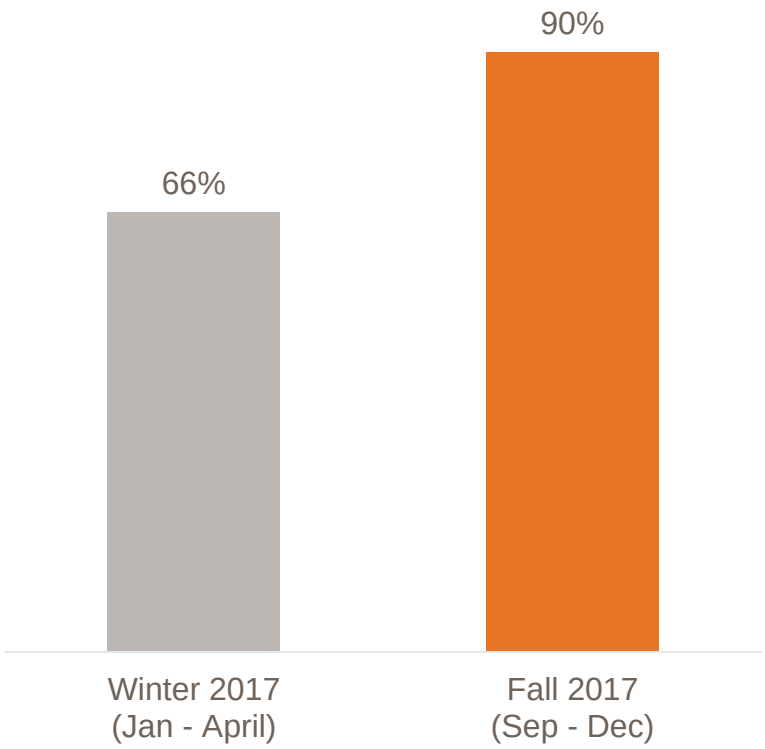
(MPQ) Medical Provider Utilization And Events
Recording:
Case: TRAIN732
Question: MED
Prescribed Medicine Lookup
Cancel
Previous Page
Exit & Save
Next Page
v0102

Results

Frequency of Use

- With the **previous design**, use of the lookup was optional.
  - About 66% of new medicine names were added using the previous lookup in winter 2017.
  - 48% of interviewers used the lookup more than half the time, and 23% of interviewers never used it.
- With the **new design**, interviewers must use the lookup for any medicine name entry. In the first round of fielding (fall 2017):
  - About 90% of medicines were entered using the new lookup.
  - This includes medicines where name matched, but not strength or form.

Use of the lookup increased from 66% to 90% of medicines entered with the new design.



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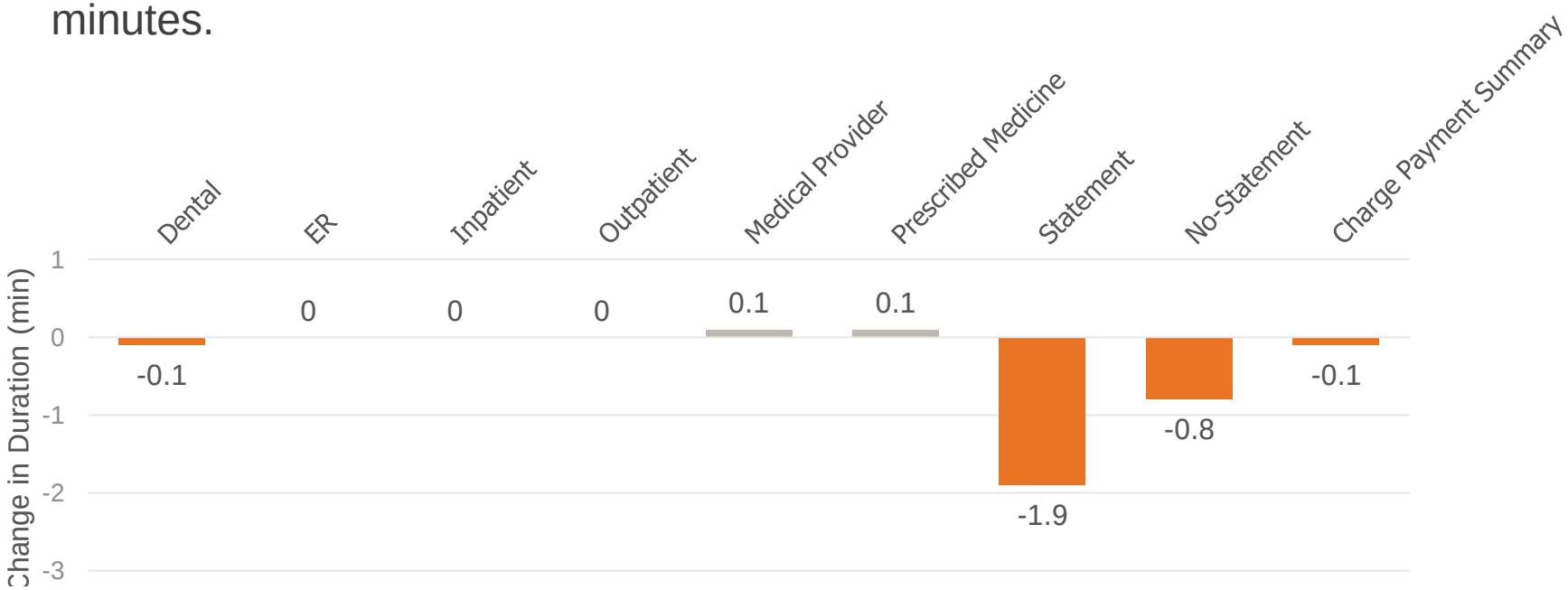
Results

Effects on Interview Duration

- The lookup can be called from any of 9 sections in the questionnaire that collect medical event data. No other changes were made to these sections in Fall 2017.
- In Fall 2017, the net change to those 9 sections was **a decrease of 2.7 minutes,** as compared to Fall 2016. Median overall interview duration was 79 minutes.



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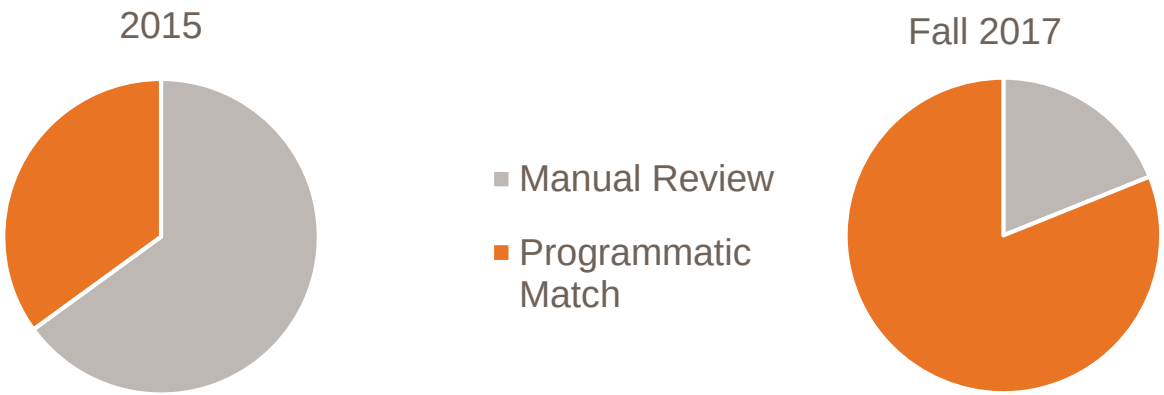
Results

Quality of Medicine Data Entered

- The main goal of this revision was to improve data quality by reducing the amount of manual data editing and review needed to match survey-entered medicines with claims data.
- Full results will not be available until 2019 or later, but preliminary data suggests substantial improvement to the matching process:
  - The new lookup will have increased the number of medicines that programmatically match to the commercial list without any manual review or editing.
  - In 2015, **35%** of medicines matched exactly to the source list on name, strength, and form without manual review or editing.
  - In Fall 2017, **81%** of medicines entered using the new lookup are exact matches to the source list on name, strength, and form, requiring no manual review.



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Challenges and Future Improvements

- Training on the new lookup for experienced interviewers took place remotely, leading to some confusion during initial implementation.
  - Resulted in a collaborative model for production support and robust training materials for new interviewers.
  - Subsequent rounds have not presented the same problem, indicating interviewers have adapted.
- Medicine source list is dynamic: plan to update the list within the questionnaire annually as part of routine questionnaire maintenance while maintaining a key to allow cross-year tracking.
- Potential enhancements:
  - Introducing more dynamic searching capabilities
  - Refining search capabilities for rare medicine names that contain special characters
  - Improving data storage for situations where interviewers back up mid-interview to change medicine details
- Further analysis:
  - Full assessment of impact on data cleaning and matching processes
  - Analysis of other data quality metrics throughout first year of implementation

Questions?

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Thank You!

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