Presented at the Annual Meeting of the Consortium of Multiple Sclerosis Centers May 24–27, 2017 New Orleans, Louisiana

# ISO2 MS self<sup>®</sup>, an Educational Application for Recording MS-Related Experience and Symptoms: A Longitudinal Analysis

Brandy Northcutt, Richard Muser, Michael Russo, Joanne M. Wagner | Acorda Therapeutics, Inc., Ardsley, NY, USA

# Background

- MS self<sup>®</sup> is a Fitbit<sup>®</sup>-enabled, multicomponent, educational application (App) (Figure 1)
- Free App available for both iOS and Android
- The journaling feature of the App allows users to record multiple events pertaining to MS-related symptoms, mobility impairment, activities of daily living (ADLs), and to generate concise reports that can be shared with their healthcare providers (HCPs)
- Overview of key features
- Educational Fact Cards
- More than 50 Fact Cards provide info and tips on managing the physical, emotional, and mental challenges of living with MS
- Fact Cards are updated regularly
- Topics easily searchable within the App
- Symptom tracking
- Enables users to track mood, symptoms, and activities
- Users can add text to describe their daily experiences
- "Emoticons" encourage users to be forthcoming in expressing their emotions
- Fitbit and weather integration
- Information on weather conditions may be useful to those whose symptoms can be exacerbated by extreme temperatures
- Reporting
- Presents historical data collected from symptom tracker, Fitbit, and weather
- Data can be tracked weekly, monthly, or as customized by user
- Enables user to visualize trends, which may help facilitate dialogue with HCPs and caregivers. The user has the ability to print a longitudinal ambulation assessment report from the App and send via e-mail or take to their doctor appointments
- The App (version 1.0 launched on November 20, 2013; current version: 1.8) can generate a concise report to share with HCPs during visits

# Objective

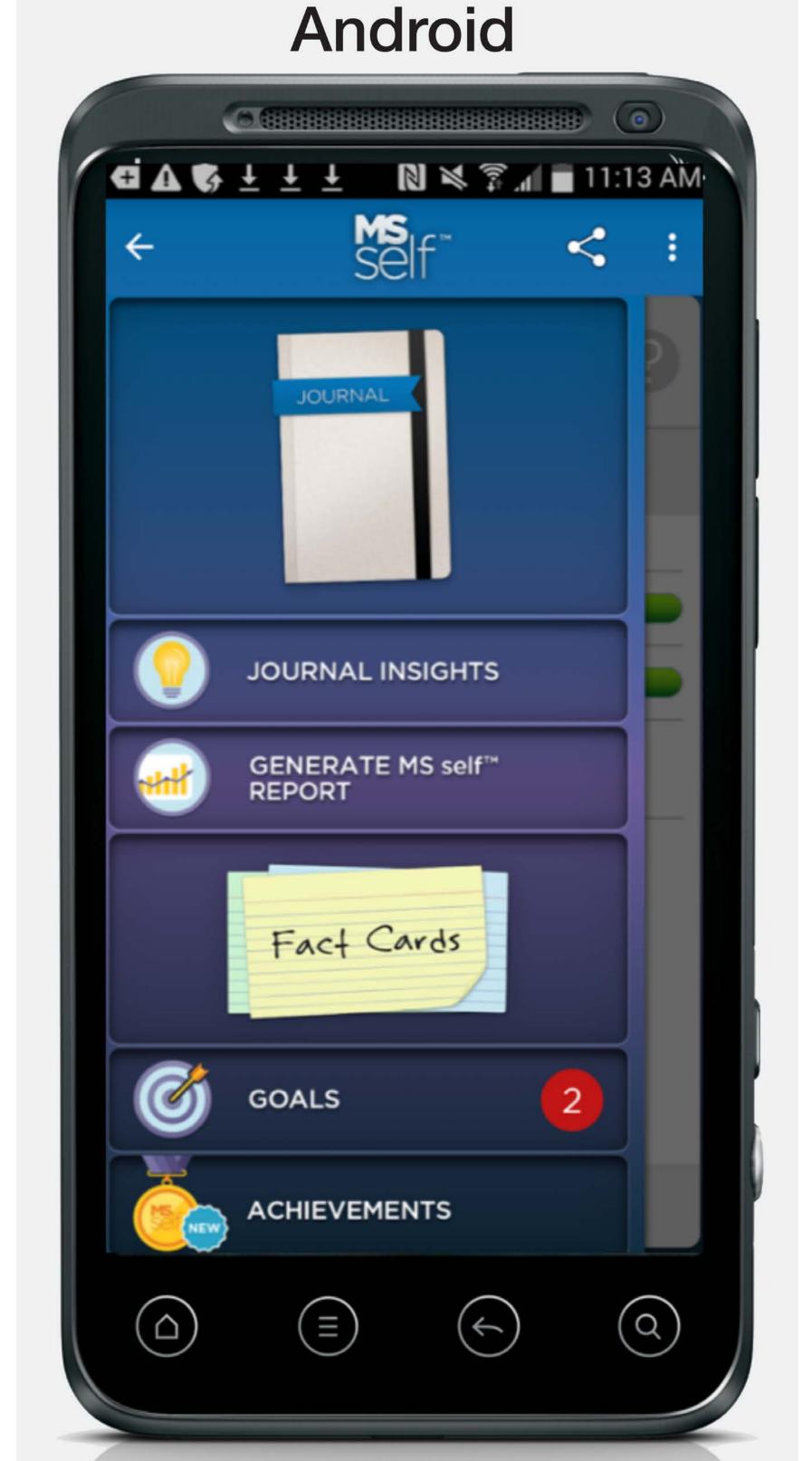
To provide user experience data from the MS self® App

# Methods

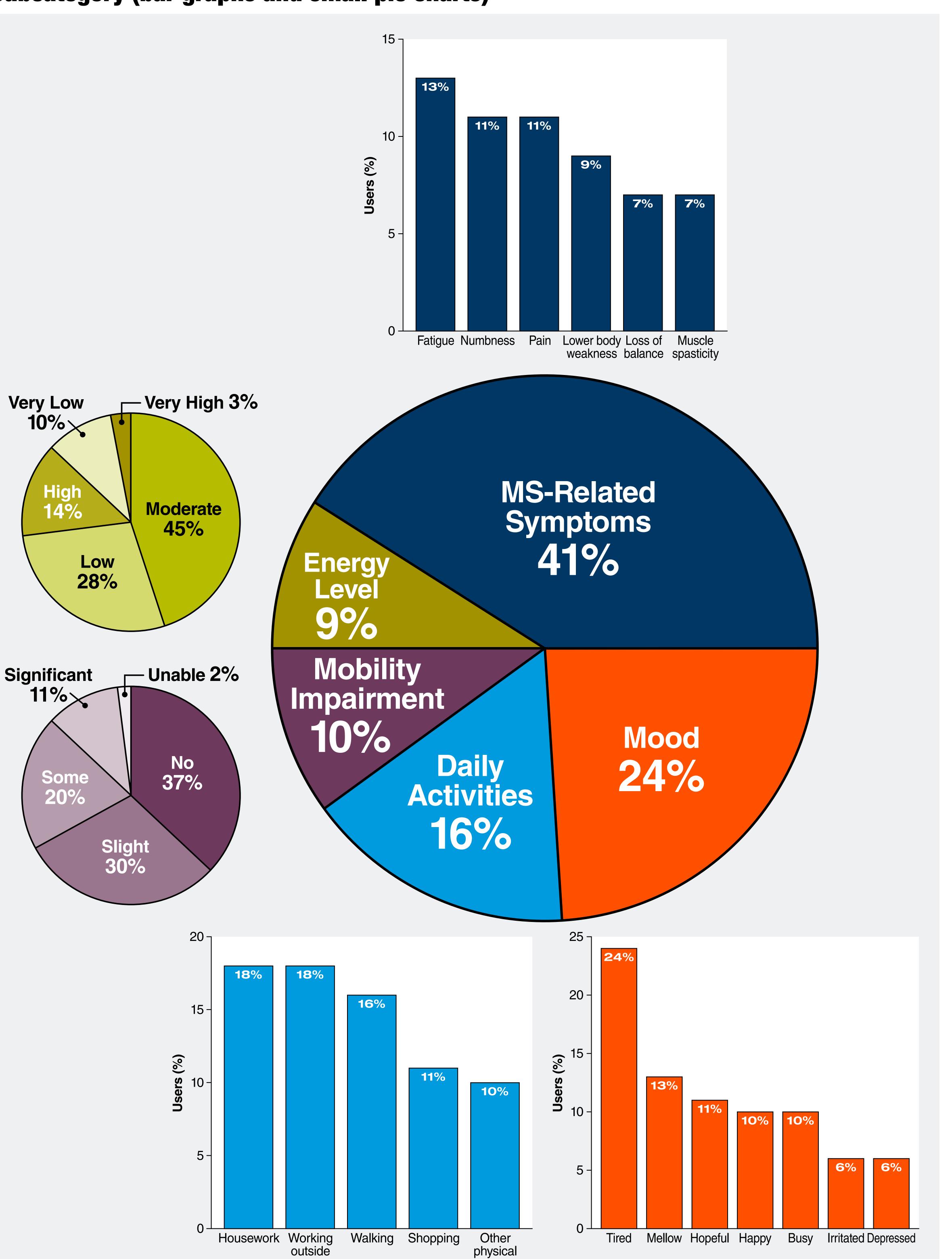
 In this longitudinal analysis, de-identified and aggregated data for MS-related symptoms, mobility impairment, and ADLs were tracked using Google Analytics from November 2, 2015, to September 1, 2016, and compared with data from December 1, 2013, to November 1, 2015

### Figure 1. The MS self® App, a Multicomponent, Educational App





#### Figure 2. Total Reported Journal Events (n=475,387), by Category (main pie chart) and Subcategory (bar graphs and small pie charts)



## Results

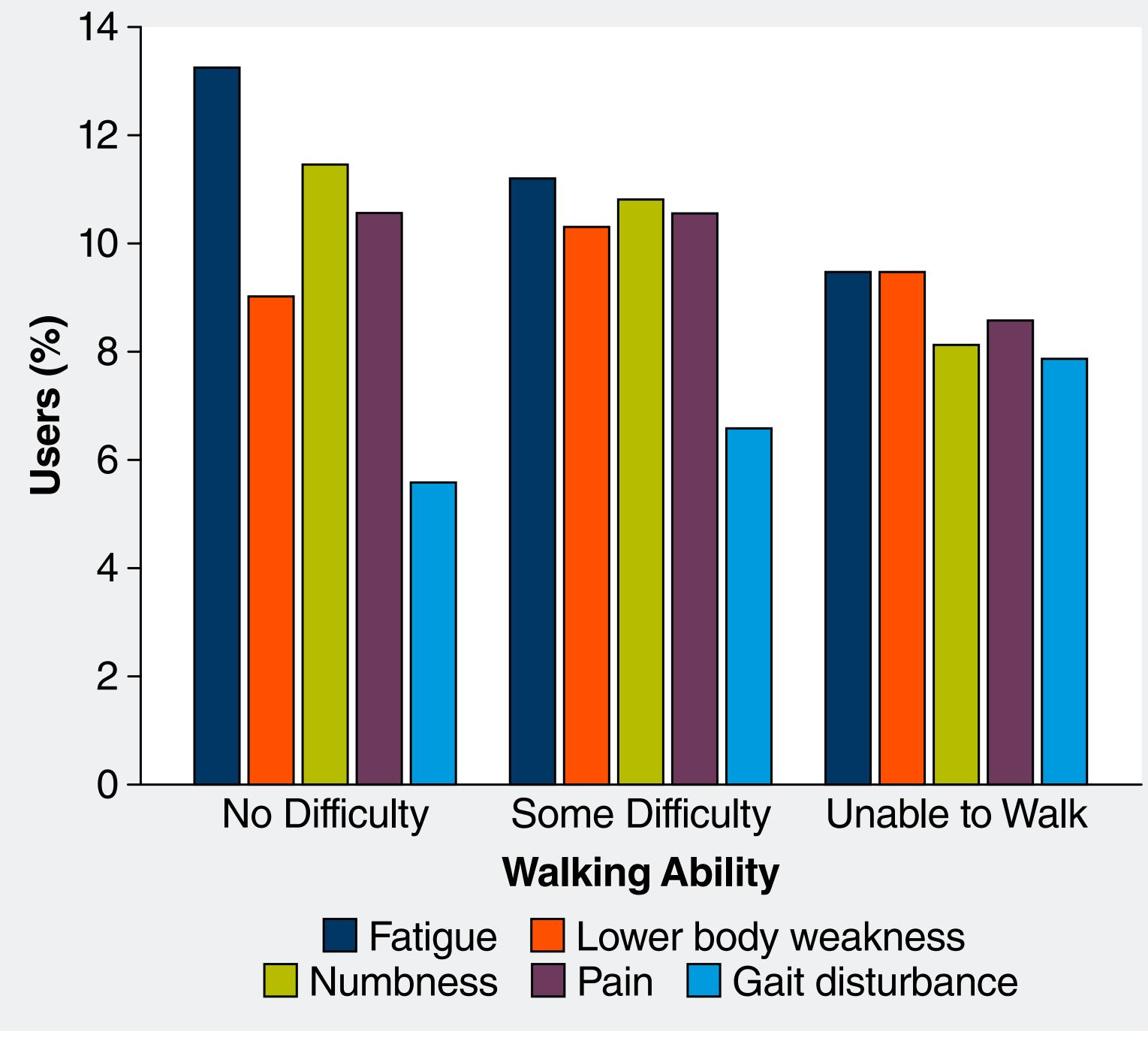
- From 2015–2016, an estimated 8,499 users logged 107,461 sessions; average session time: 3 minutes and 6 seconds (Table 1)
- From 2013-2015, an estimated 11,120 users accessed the App (2013–2014: 3,535 users; 2014–2015: 7,585 users)
- —There was an 8% increase in the total number of journal events recorded: 825,698 vs 763,307 for 2015-2016 vs 2013-2015, respectively

#### Table 1. Overall Usage From 2013 to 2015 and 2015 to 2016, as Determined by Google Analytics. by Variable

as Determined by Google Amarytics, by Variable		
Variable	2013-2015	2015–2016
Performance Totals		
Users, N	11,120	8,499
Sessions, N	84,886	107,461
Events, N	726,123	825,698
Avg. session duration, sec	6:39	3:06
Events, %		
MS-related symptoms	41	41
Mood	24	25
Total daily activities	16	16
Mobility impairment	10	10
Energy levels	8	9

- 475,387 journal events recorded (Figure 2)
- -41% of journal events were related to MS-related symptoms
- Fatigue (13%), numbness or tingling (11%), pain (11%), lower body weakness (9%), loss of balance/dizziness (7%), muscle spasticity/ tremors (7%)
- -24% of journal events pertained to mood
- Tired (24%), mellow (13%), hopeful (11%), happy (10%), busy (10%), irritated (6%), depressed (6%)
- 16% of journal events were related to total daily activities
- Housework (18%), working outside of the home (18%), walking (16%), shopping (11%), other physical activity (10%)
- 10% of journal events pertained to mobility impairment
- 20% indicated some mobility impairment
- 11% indicated significant impairment
- -9% of journal events pertained to energy levels
- Longitudinal analysis indicates that the proportions of events were consistent between 2015–2016 vs 2013–2015 (**Table 1**)
- MS-related symptoms were stratified by mobility (level of ability to walk) (Figure 3)
- Fatigue was the most frequently reported symptom, regardless of mobility level
- Reports of fatigue, numbness, and pain were less frequently reported in patients reporting mobility impairment
- Reports of gait disturbance were more frequently reported in patients reporting mobility impairment

#### Figure 3. MS-Related Symptoms<sup>a</sup> Stratified by Mobility



<sup>a</sup>Symptoms were recorded based on the question "Check any symptoms you have experienced today." Mobility level was recorded based on the question "How would you rate your mobility today?"

# Limitation

• The users of the App were not required to have a confirmed diagnosis

# Summary

- Longitudinal data support the use of the App as a tool to record MS-related experience and symptoms that could be used to facilitate patient engagement with HCPs
- There was consistency of recorded journal events between 2015-2016 and 2013-2015
- The next version of the App (version 3.0) will include
- 12-Item Multiple Sclerosis Walking Scale (MSWS-12): validated, self-reported patient questionnaire rating the effect of MS on walking
- Scheduled reminders to generate reports prior to next doctor's
- Addition of new User Profile questions

Support This study was supported by Acorda Therapeutics, Inc. Editorial assistance was provided by The Curry Rockefeller Group, LLC, which was funded by Acorda Therapeutics, Inc.

Disciosures BN, RM, MR, and JMW are employees and stockholders of Acorda Therapeutics, Inc.

