



Published in final edited form as:

*Am J Phys Med Rehabil.* 2020 January ; 99(1): 1–6. doi:10.1097/PHM.0000000000001266.

## Weekend Admission to Inpatient Rehabilitation Facilities is Associated with Transfer to Acute Care in a Nationwide Sample of Patients with Stroke

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### Abstract

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There are no conflicts of interest

**Objective:** To determine the impact of weekend versus weekday admission to an inpatient rehabilitation facility (IRF) on the risk of acute care transfer in patients with stroke.

**Design:** This was a retrospective analysis using the Uniform Data System for Medical Rehabilitation, a national database comprising data from 70% of U.S. IRFs. A total of 1,051,436 adult (age ≥ 18 years) stroke cases were identified between 2002–2014 that met inclusion criteria. Logistic regression models were developed to test for associations between weekend (Friday–Sunday) versus weekday (Monday–Thursday) IRF admission and transfer to acute care (primary outcome) and IRF length of stay (secondary outcome), adjusting for relevant patient, medical, and facility variables. A secondary analysis examined acute care transfer from 2002–2009 prior to passage of the Affordable Care Act (ACA), 2010–2012 post-ACA, and 2013–2014 after implementation of the Hospital Readmissions Reduction Program (HRRP).

**Results:** Weekend IRF admission was associated with increased odds of acute care transfer (OR 1.06, 95% CI 1.04–1.08) and slightly shorter IRF length of stay ( $p < 0.001$ ). Overall, the risk of acute care transfer decreased following the ACA and HRRP.

**Conclusion:** Weekend admission to IRF may pose a modest increase in the risk of transfer to acute care in patients with stroke.

### Keywords

Patient readmission; stroke; stroke rehabilitation; quality of health care

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## Introduction

Acute care hospital admissions that occur during the weekend are associated with poorer patient outcomes including delays in diagnostic evaluations<sup>1</sup> and procedural interventions,<sup>2,3</sup> increased morbidity and mortality,<sup>4–6</sup> longer hospital stays,<sup>7,8</sup> and increased rates of unplanned readmissions as compared to weekday admissions.<sup>9</sup> Based on a meta-analysis of 97 studies, this “weekend effect” persists even after accounting for any differences in illness severity.<sup>10</sup> Increasing numbers of patients are being discharged to the post-acute care setting including inpatient rehabilitation facilities (IRFs) and skilled nursing facilities (SNFs) for continued medical care and rehabilitation services. However, very few studies have investigated whether weekend admission to post-acute care facilities impacts patient outcomes in terms of important clinical and quality metrics such as the rate of transfers back to acute care and hospital length of stay (LOS).

Patients with stroke comprise one of the largest IRF impairment groups, accounting for approximately 20% of IRF admissions, and have a 10% rate of transfer back to acute care.<sup>11</sup> In the few studies that have investigated transfers back to acute care in the inpatient stroke rehabilitation population, no differences in transfer rates were found based on weekend versus weekday IRF admission. However, these studies were limited by single-site data,<sup>12</sup> or included only patients with the most severe strokes.<sup>13</sup> Additionally, prior studies did not account for significant changes in healthcare policy that have more recently taken place including passage of the Affordable Care Act (ACA) in 2010 and implementation of the Hospital Readmissions Reduction Program in 2012, which together have significantly impacted readmission rates nationwide.<sup>14</sup>

The objective of this study was to examine the impact of weekend admission to an IRF on the risk of transfer to acute care and effect on IRF LOS for patients with stroke using a large national database. A secondary objective was to determine whether passage of the ACA and HRRP influenced this effect.

## Methods

### Study Design

This was a retrospective review of a large national administrative dataset, the Uniform Data System for Medical Rehabilitation (UDSMR), which is a data repository comprising demographic, medical, and facility data from approximately 70% of IRFs in the U.S. IRFs routinely collect this data using the IRF-Patient Assessment Instrument (available for review at <https://www.cms.gov/Medicare/Medicare-Fee-for-Service-Payment/InpatientRehabFacPPS/IRFPAI.html>) as mandated by the Centers for Medicare and Medicaid Services (CMS). The dataset was accessed via a site agreement between the research institution and the UDSMR. This was a deidentified dataset and therefore the requirement for written informed consent from subjects was waived and this study was considered exempt by the institutional review board.

### Study Population

All IRF admissions for patients 18 years of age under the stroke impairment code occurring between 2002 and 2014 were identified. Impairment codes are assigned upon each IRF admission and indicate the primary reason for admission. Cases with International Classification of Disease, Ninth Edition Clinical Modification (ICD-9-CM) codes consistent with ischemic and hemorrhagic stroke (ICD-9-CM 430–434 and 436) were included. Cases were excluded if the patient had an ICD-9-CM code for transient ischemic attack (ICD-9-CM 435), or if the patient was discharged against medical advice because hospital length of stay was artificially reduced.

### Study Variables

Study variables were selected based on clinical relevance and on patient and facility characteristics available in the UDSMR dataset which were demonstrated in prior studies to be associated with a higher risk of transfers back to acute care in IRF patients.<sup>11,15–19</sup>

The following patient demographics were included: age; sex; stroke type (hemorrhagic or ischemic); race/ethnicity (white, African American, Latino/Hispanic, Asian, multiracial or “other”); marital status (married or unmarried); living status (living alone or not living alone); pre-injury employment status (employed, unemployed, or retired); and primary payer source (Medicare, Medicaid, commercial insurance, unreimbursed, or worker’s compensation). Patient functional status upon IRF admission was also assessed using the FIM® instrument,<sup>20</sup> a standardized 18-item measure including motor (13 items) and cognitive (5 items) domains that is routinely performed within 72 hours of IRF admission and captured in the UDSMR dataset. Duration of impairment was also included and was defined as the number of days between stroke onset and IRF admission.

Medical comorbidities were assessed using the Elixhauser comorbidity index which places ICD-9-CM codes into one of 29 disease categories and assigns weights to each category; it has been previously validated as a measure of comorbidity severity in large administrative datasets.<sup>21</sup> The UDSMR allows up to ten ICD-9-CM codes to be classified as medical comorbidities for each patient.

IRF admission day of the week was categorized as weekday versus weekend. A weekend IRF admission was defined as admission on a Friday, Saturday, or Sunday. Friday was included as the weekend because, similar to Saturday and Sunday, patients tend to undergo multiple transitions of care early in the hospital stay, and initial labs and radiology results are often reviewed by a separate weekend medical coverage team as opposed to the primary weekday medical team.

Facility characteristics were also examined and IRFs were categorized by size, facility type (freestanding or within unit), and geographic location (East, West, or Central based on CMS regional designations).

## Outcomes

The primary outcome was transfer to acute care, defined as direct transfer from an IRF to an acute care hospital within 30 days of IRF admission. Patients who were transferred to acute care from IRF after 30 days were not included. Additionally, patients who were discharged home or to a skilled nursing facility from an IRF and then readmitted to an acute care hospital were not captured because this information is not available in the UDSMR dataset.

The secondary outcome was IRF LOS defined as the number of days between IRF admission and IRF discharge, regardless of discharge location (acute care hospital, skilled nursing facility/subacute, community, died, other).

## Statistical Analysis

The primary study hypothesis was that weekend IRF admissions would be associated with higher odds of transfer to acute care as compared to weekday IRF admissions. To test this hypothesis, logistic regression models were developed to test the effect of IRF admission day of the week (weekend vs. weekday) on the rate of transfer to acute care while controlling for patient and facility characteristics. Age was scaled into 10-year units, admission FIM® instrument scores into 7-point units, and facility size into 10-bed units. Variables that were not statistically significant were dropped from the final regression model. P-values < 0.05 were considered statistically significant. A subgroup analysis was performed to assess the effect of stroke type on 30-day transfer to acute care by weekend vs. weekday IRF admission.

A secondary analysis was performed to examine whether implementation of the ACA and HRRP was associated with different rates of transfer to acute care following a weekend vs. weekday IRF admission. The study period was divided into three intervals: 2002–2009 prior to enactment of the ACA (“pre-ACA”); 2010–2012 after passage of the ACA but prior to implementation of financial readmissions penalties via the HRRP (“pre-HRRP”); and 2013–2014 after implementation of the HRRP (“post-HRRP”). Though the ACA and HRRP were

not implemented at the start of a calendar year (the ACA was signed into law on March 23, 2010, and financial penalties were implemented as part of the HRRP on October 1, 2012), we based our analyses on the calendar year as our dataset was deidentified and therefore only the year of discharge was known.

Data was missing from 76,664 (7.3%) of cases. Cases with missing data were dropped for complete case analysis. To minimize the risk of bias,<sup>22</sup> multiple imputation was also used to account for missing data, which is recommended when there are more than 3% of missing data.<sup>23</sup> Multiple imputation was performed using the chained equation or fully conditional specification technique.<sup>24</sup> Estimates from 20 imputed datasets were combined using Rubin's rules and the results of the imputation process were checked using standard diagnostics.<sup>25</sup>

All statistical analyses were performed using StataCorp, version 14.1 (StataCorp. 2015. Stata Statistical Software: Release 14. College Station, TX: StataCorp LP).

## Results

Between 2002 and 2014, there were 1,166,476 cases under the stroke impairment code for adults 18 years of age within the UDSMR dataset. Of these, 994 cases were excluded due to discharge against medical advice, and 114,046 cases were excluded for an ICD-9-CM code of 435 consistent with transient ischemic attack. The final study sample included 1,051,436 cases; 635,217 cases between 2002–2009, 261,502 between 2010–2012, and 154,717 between 2013–2014.

Demographics of the study population are shown in Table 1. The mean age of patient cases was 69.6 years (SD 13.76), 51.0% were female, and 71.2% were white. A total of 294,905 cases (28.1%) were admitted to an IRF during the weekend whereas 756,170 cases (71.9%) were admitted on a weekday. Overall, 106,371 cases (10.1%) were transferred back to an acute care hospital. The transfer rate to acute care was 10.5% for weekend IRF admissions versus 10.0% for weekday IRF admissions. A comparison of patient demographic and facility characteristics for those admitted to an IRF on a weekend versus weekday were all statistically significant with the exceptions of sex and marital status (Table 1).

## Primary Analysis

To examine the association between weekend vs. weekday IRF admission and transfers back to acute care, we developed a logistic regression model adjusting for age, sex, stroke type, duration of impairment, race/ethnicity, marital status, living status, pre-injury employment status, primary payer source, admission FIM® instrument score, Elixhauser comorbidity index, facility size, facility type, and geographic location. There was a noted interaction between marital status and living status, and therefore this interaction term was also included in the model. Facility type was not statistically significant and was therefore dropped from the final model.

After adjustment for the previously mentioned variables, weekend IRF admission was associated with a 6% increase in odds of transfer to acute care as compared to weekday IRF admission (OR 1.06, 95% CI 1.04–1.08). For cases of hemorrhagic stroke, 12.1% of

weekend IRF admissions were transferred back to acute care versus 11.4% of weekday IRF admissions. For cases of ischemic stroke, 10.3% of weekend IRF admissions were transferred back to acute care versus 9.7% of weekday IRF admissions. There was no association between stroke type and weekend IRF admission in terms of the effect on transfer to acute care ( $p = 0.87$ , 95% CI 0.97–1.04).

We also examined the effect of weekend vs. weekday IRF admission on IRF LOS as a secondary outcome, adjusting for age, sex, stroke type, duration of impairment, race/ethnicity, marital status, living status, pre-injury employment status, primary payer source, admission FIM® instrument score, Elixhauser comorbidity index, facility size, facility type, and geographic location. Weekend IRF admission was associated with a slightly shorter IRF LOS as compared to weekday IRF admission (16.5 days vs. 16.7 days,  $p < 0.001$ ); though statistically significant, this was not considered to be clinically significant.

### Secondary Analysis

Between 2002–2009, prior to enactment of the ACA, 10.5% of weekend and 10.1% of weekday IRF admissions were transferred back to acute care. Between 2010–2012, after passage of the ACA but prior to implementation of the HRRP, 10.7% of weekend and 9.8% of weekday IRF admissions were transferred back to acute care. Between 2013–2014, following implementation of readmission penalties by the HRRP, 10.2% of weekend and 9.3% of weekday IRF admissions were transferred back to acute care.

Compared to the time period 2002–2009, the overall odds of transfer to acute care were lower during 2010–2012 (OR 0.93, 95% CI 0.90–0.95) and 2013–2014 (OR 0.87, 95% CI 0.83–0.90) after passage of the ACA and HRRP, respectively. However, compared to 2002–2009, there were higher odds of transfer to acute care following a weekend versus weekday IRF admission between 2010–2012 (OR 1.05, 95% CI 1.02–1.09), and a trend towards higher odds of transfer to acute care from a weekend IRF admission during 2013–2014 (OR 1.03, 95% CI 0.99–1.07); Table 2.

### Multiple Imputation

All regression models were repeated with imputed results for missing data using the multiple imputation method, and the results were qualitatively unchanged as compared to complete case analysis.

### Discussion

This is the largest multicenter study of the association of weekend IRF admission on the risk of transfer to acute care for patients with stroke. The results of this study demonstrate that admission to an IRF on a weekend as opposed to a weekday is associated with 6% higher odds of transfer back to acute care, even after controlling for patient comorbidities, demographics, and facility characteristics. Though this increase in transfer risk is modest, it has important implications in terms of healthcare costs, inter-facility and inter-provider handoffs, and IRF staffing for patients admitted on weekends.

At the institutional level, differences in staffing on the weekend versus weekdays may play a role in the differential risk of transfer back to acute care. For instance, CMS requirements for physician face-to-face visits with patients at IRFs starts at a minimum of three visits per week. While most physicians at IRFs opt to see patients five to seven days per week, this is facility-dependent, and patients may not be routinely seen on the weekends. Medical, nursing, and therapy staffing as well as ancillary services at IRFs are also typically reduced over the weekend, which may contribute to differences in outcomes. Reduced weekend staffing and subsequent delays in care have also been cited as a reason for poorer patient outcomes following weekend admission in the acute care setting.<sup>3,6</sup> Revised hospital staffing patterns on the weekends might improve outcomes for patients admitted on the weekend.

The increased number of handoffs that occur with a weekend admission may also contribute to differences in outcome. For instance, at IRFs, the admitting medical team on the weekends is often different from the primary medical team during the rest of the week. Therefore, patients admitted over the weekend may experience several transitions of care and physician handoffs early during their stay when important tasks are being completed, including the medication reconciliation process and review of admission laboratory results. In the acute care setting, a review of emergency room malpractice claims demonstrated inadequate handoffs to be a contributing factor in 24% of medical errors.<sup>26</sup> Improved inter-provider and inter-institutional handoffs over the weekend therefore represent an opportunity for intervention to reduce the rates of readmission. In the acute care setting, the I-PASS mnemonic was developed to provide a structured framework for resident physician handoffs. I-PASS stands for **I**llness severity, **P**atient summary, **A**ction list, **S**ituation awareness and contingency planning, and **S**ynthesis by receiver. Implementation of the I-PASS mnemonic to standardize oral and written handoffs reduced the medical error rate by 23% and the rate of preventable adverse events by 30% without negatively impacting workflow.<sup>27</sup> Additionally, formalized communication between the acute care neurology team and the rehabilitation team decreased the proportion of errors in reconciliation of critical medications by 19%.<sup>28</sup> Implementing a standardized weekend handoff process at IRFs and streamlining regular communication between the acute care and rehabilitation teams might be an effective strategy to reduce the risk of acute care transfers for patients admitted on weekends.

An additional interesting finding of this study was that patients admitted to IRFs on the weekend had slightly shorter IRF lengths of stay as compared to those admitted to IRFs on weekdays, though this difference was not considered to be clinically significant. However, in the acute care setting, weekend admissions have been associated with longer hospital LOS as opposed to shorter.<sup>7,29</sup> One possibility for our finding is that patients admitted to IRFs on the weekend may be more medically stable, less sick, and higher functioning as compared to patients that the acute care team might be more inclined to discharge during the week when staffing is maximal. In support of this, patients discharged from acute care on weekends also often had shorter hospital stays compared to those discharged on weekdays.<sup>30,31</sup> If this is the case, however, it might be expected that acute care transfer risk would be lower for weekend as compared to weekday IRF admissions, which is contrary to the current study findings. An

alternative possibility is that the IRF stay is artificially cut short as a result of transfer back to acute care, which has a higher odds of occurring with a weekend admission.

At a national level, the topic of hospital readmissions has garnered high levels of attention over the past decade, particularly in the current climate of outcome- and performance-based healthcare reimbursement in the U.S. Growing concern about excessive healthcare spending on preventable readmissions was reflected in passage of the Affordable Care Act (ACA) in 2010, which included strategic efforts to reduce 30-day hospital readmissions such as the 2012 Hospital Readmissions Reduction Program (HRRP). Under the HRRP, the Centers for Medicare and Medicaid Services (CMS) introduced reduced payments to hospitals for excessive 30-day readmissions for targeted conditions that initially included myocardial infarction, heart failure, and pneumonia, and which have been expanded to include chronic obstructive pulmonary disease, total hip or knee replacements, and coronary artery bypass graft. In response, hospitals have also heightened their efforts to meet these quality expectations. The results of these efforts are manifested by an overall decline in targeted condition readmission rates from 21.5% in 2007 to 17.8% in 2015, with a more modest decline in readmission rates for non-targeted conditions.<sup>14</sup>

Consistent with national acute care data, our analysis similarly demonstrates a decline in the overall odds of transfer back to acute care from IRFs following implementation of the ACA and HRRP. Efforts to reduce readmissions from post-acute care settings, including IRFs, are already under way. CMS launched the IRF Compare Site (<https://www.medicare.gov/inpatientrehabilitationfacilitycompare/>) in December 2016, which publicly reports quality metrics from IRFs, including the All-Cause Readmission Measure for 30 Days Post Discharge from Inpatient Rehabilitation Facilities. Therefore, reducing readmission risk from post-acute care settings that include IRFs will become increasingly important as increased numbers of patients are discharged to post-acute care. Our current finding that weekend admission to an IRF may pose an increased risk of transfer back to acute care is a potential area for targeted intervention, and warrants further study to identify potential contributing factors.

Interestingly, the odds of transfer to acute care following weekend IRF admission were higher after passage of the ACA compared to the years preceding this legislation. One possibility for this is that IRFs may have started altering their practice behaviors to reduce acute care transfer rates alongside acute care hospitals in response to implementation of the ACA. However, these changes may have altered practice during the week, but not on the weekends, therefore contributing to increased odds of acute care transfer from a weekend IRF admission as compared to a weekday admission. Over time, these practice changes may have become more consistent regardless of weekday versus weekend. Though there was still a trend in increased odds of transfer back to acute care after a weekend versus a weekday IRF admission after 2012, this difference was no longer statistically significant.

## Limitations

This study is not without limitations. First, our statistical analyses did not account specifically for case mix groups (CMGs; comprised of impairment group code, admission motor FIM® score, admission cognitive FIM® score, and age) and tier comorbidities which

are used in the IRF setting to group together patients with similar characteristics for the purposes of determining medical reimbursement. However, our models did account for all relevant components including the impairment group code for stroke, admission total FIM® score, age, and the validated Elixhauser comorbidity index to account for tier comorbidities. Second, our analyses were based upon the assumption that there were no random effects of IRFs on the outcome of interest. Although numerous attempts were made to perform a random effects model, these models would not converge and could not be estimated. Therefore, robust cluster standard errors were used to adjust the standard errors.<sup>32</sup> Though we were unable to estimate IRF effects, this was not the main area of interest for this study. There are additional limitations related to the availability of data within the UDSMR dataset. For instance, the UDSMR dataset does not capture admission time of day. At some IRFs, late evening weekday admissions are often completed by a covering “on call” physician as opposed to the primary rehabilitation physician, which carries similar challenges with regards to multiple handoffs in the early phase of the IRF stay. However, this would have a tendency to dilute any differences in weekend versus weekday acute care transfer risk, which may translate into a higher risk of acute care transfer for weekend IRF admissions than currently captured in this study. Another limitation of the study is that data regarding enteral feeding, which has been shown to be a predictor of acute care readmission,<sup>33</sup> was not routinely collected in the UDSMR database and thus was not incorporated into the statistical models. However, the models did include admission FIM® instrument scores which contains data on feeding status. The dataset also did not allow for differentiation between unplanned transfers to acute care (which typically reflect an acute medical situation) and planned transfers to acute care (such as scheduled procedures or surgeries), which may have an impact on overall acute care transfer rates. Lastly, UDSMR readmission data only includes patients who were transferred back to an acute care hospital from an IRF. Patients who were discharged home or to a skilled nursing facility and then readmitted to acute care were not included in this analysis, and therefore readmissions may be underreported within the UDSMR dataset. Despite these limitations, this study is the first multicenter national study to examine the effect of weekend IRF admission on transfer to acute care in patients with stroke.

## Conclusions

In this large national sample of patients admitted to IRF after stroke, weekend IRF admission is associated with an increased odds of transfer to acute care as compared to weekday IRF admission. Further investigation to identify the patient, facility, and staffing characteristics that contribute to this “weekend effect” may uncover potential areas for targeted intervention to further reduce the risk of unplanned hospital transfers and readmissions.

## Acknowledgments

Author Disclosures:

This research has not been presented.

The authors received no specific funding for this work.

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**Table 1:**

Study population demographic and inpatient rehabilitation facility (IRF) characteristics

Characteristics	Non-Weekend Admission (M-Th)	Weekend Admission (F-Sun)	Totals
Number of Facilities			1, 213
Number of Admissions (%)	756,170 (71.9)	294,905 (28.1)	1,051,075
Stroke type (%)			
Ischemic	636,646 (84.2)	250,722 (85.0)	887,368 (84.5)
Hemorrhagic	119,524 (15.8)	44,183 (15.0)	163,707 (15.5)
Age at admission, mean (SD)	69.6 (13.8)	69.9 (13.7)	69.63 (13.7)
Race/Ethnicity (%)			
White	537,069 (71.0)	211,170 (71.6)	748,239 (71.2)
Black	121,861 (16.1)	45,680 (15.5)	167,541 (15.9)
Hispanic	46,350 (6.1)	18,143 (6.2)	64,493 (6.1)
Asian	20,987 (2.8)	8,118 (2.8)	29,105 (2.8)
Other	7,920 (1.0)	3,166 (1.1)	11,086 (1.1)
No race	19,354 (2.6)	7,659 (2.6)	27,013 (2.6)
Multi-race	2,556 (0.03)	952 (0.3)	3,508 (0.3)
Gender (%)			
Male	370,064 (49.0)	144,538 (49.0)	514,602 (49.0)
Female	385,936 (51.0)	150,292 (51.0)	536,228 (51.0)
Admission FIM total, mean (SD)	55.16 (19.6)	54.99 (19.6)	55.12 (19.6)
Days from onset, mean (SD)	11.1 (19)	9.59 (16.3)	10.68 (18.3)
Weighted Sum of Elixhauser Comorbidities, mean (SD)	6.5 (6.0)	6.5 (6)	6.48 (5.9)
Marital Status (%)			
Married	373,021 (50.1)	145,741 (50.2)	518,762 (50.1)
Unmarried	371,563 (49.9)	144,523 (49.8)	516, 086 (49.9)
Lives alone (%)			
Yes	199,639 (27.2)	78,774 (27.6)	278,413 (27.4)
No	533,645 (72.8)	207,082 (72.4)	740,727 (72.6)
Pre-injury employment status (%)			
Employed	128,853 (17.3)	49,017 (16.9)	177,870 (17.2)
Unemployed	79,450 (10.7)	29,468 (10.2)	108,918 (10.5)
Retired/age	475,196 (64.0)	188,420 (65.1)	663,616 (64.3)
Retired/disability	59,554 (8.0)	22,665 (7.8)	82,219 (8.0)
Primary payer (%)			
Medicare	520,244 (68.8)	205,377 (69.6)	725,621 (69.0)
Medicaid	44,822 (5.9)	16,674 (5.7)	61,496 (5.9)
Commercial Insurance	149,310 (19.7)	57,448 (19.5)	206,758 (19.7)
Unreimbursed	30,573 (4.0)	11,086 (3.8)	41,659 (4.0)

Characteristics	Non-Weekend Admission (M-Th)	Weekend Admission (F-Sun)	Totals
Worker's Compensation	431 (0.06)	173 (0.001)	604 (0.001)
Other	10,786 (1.4)	4,144 (1.4)	14,930 (1.4)
Operating Beds, mean (SD)	45.1 (35.6)	46.2 (36.6)	45.43 (35.9)
Facility Type (%)			
Rehab Unit in Acute Care Hospital	504,924 (66.8)	190,366 (64.6)	695,290 (66.2)
Freestanding	251,246 (33.2)	104,539 (35.4)	355,785 (33.8)
Region of the Country (%)			
East	355,371 (47.0)	139,625 (47.3)	494,996 (47.1)
Central	295,772 (39.1)	113,008 (38.3)	408,780 (38.9)
West	105,027 (13.9)	42,272 (14.3)	147,299 (14.0)

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**Table 2:**

Association between the Affordable Care Act and Hospital Readmissions Reduction Program and acute care transfer from IRF

<b>Overall Transfers to Acute Care</b>		
Time period	Odds Ratio	Confidence Interval
2002–2009	1 (baseline)	--
2010–2012	0.93	0.90– 0.95
2013–2014	0.87	0.83– 0.90
<b>Transfers to Acute Care Following Weekend IRF Admissions</b>		
Time period	Odds Ratio	Confidence Interval
2002–2009	1 (baseline)	--
2010–2012	1.05	1.02– 1.09
2013–2014	1.03	0.99– 1.07

These models were controlled for the following variables: patient age, gender, admission FIM score, Elixhauser comorbidity index, marital status, living situation, employment status, and IRF size, facility type and location.