# Medicare's Hospital Readmissions Reduction Program

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*answering today's health policy questions*

# Overview of Presentation

- Background on the Hospital Readmission Reduction Program (HRRP)
- Financial Impact of HRRP Penalties
- System-wide Effects of HRRP on Hospital Readmissions
- Policy Issues Related to HRRP
- Future Considerations for HRRP

# BACKGROUND ON THE HOSPITAL READMISSION REDUCTION PROGRAM (HRRP)

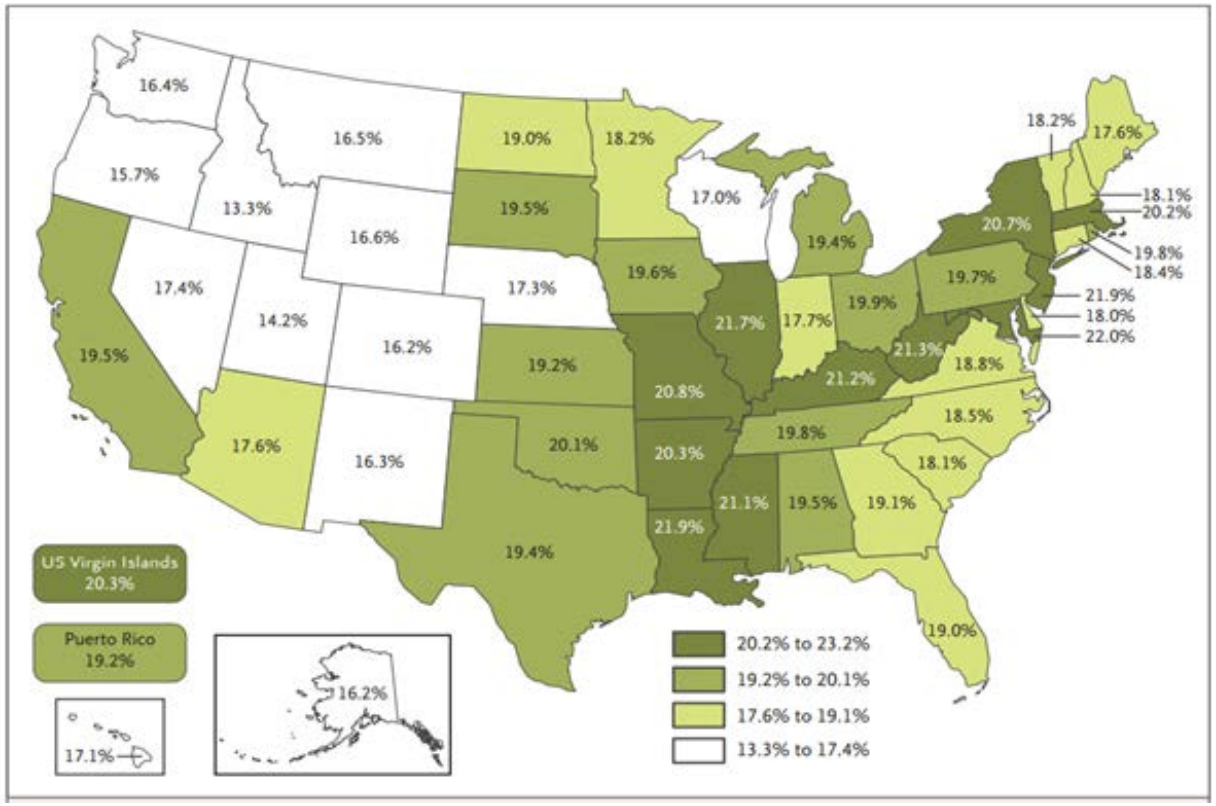
# Policy Context

- Hospital Readmission Reduction Program (HRRP) was introduced in 2010 at a time of high scrutiny of high hospital readmission rates among policy makers.
  - Historically, nearly 1 in 5 Medicare patients discharged from a hospital are readmitted within 30 days with an estimated cost to Medicare of $17.4 billion (Jencks, NEJM 2009; MedPAC Report to Congress, 2007).
  - There was variation in readmission rates across hospitals and regions, suggesting that readmissions may be reduced.

# Geographical Variation in Readmission Rates

The NEW ENGLAND JOURNAL of MEDICINE

**30-day Readmission Rates**




Source: Jencks, et al., NEJM 2009

# From Empirical Evidence to Policy Development

- Some of the readmissions may be potentially avoidable through the actions of hospitals.
  - Many factors influence readmissions.
  - There are evidence-based strategies that hospitals can implement to reduce readmissions (improved care coordination, better medication management, discharge planning).

# Hospital Readmissions Reduction Program (HRRP)

- HRRP was established by the Affordable Care Act to provide financial incentives to hospitals to reduce avoidable readmissions.
- It required CMS to reduce Medicare payments to hospitals with readmission rates that exceed the national average for select conditions.
  - Linking payment to performance
  - Readmissions within 30 days of initial discharge for any reason to any hospital, excluding planned readmissions.
- CMS started implementing penalties (payment reductions) with discharges beginning on October 1, 2012 (FY2013).
  - Penalties are applied as percentage reduction in base payments on all Medicare inpatient admissions.

# Comparing Hospital Performance to National Average

- For each hospital and condition, CMS calculates the ratio of predicted to expected readmissions, known as excess readmission ratio (ERR).
  - Predicted readmission rate = risk-adjusted readmissions based on hospital's performance on its observed case mix
  - Expected readmission rate = risk-adjusted readmissions based on average hospital performance on the individual hospital's case mix
- CMS uses ERR as a measure of comparison between the hospital's performance in readmissions and national average hospital performance given the hospital's case mix.
- A hospital's payment reduction is determined by its ERR and base DRG payments for each condition, capped at the maximum penalty.
  - The higher the ERR, the higher the penalty rate.
  - Low ERR is not rewarded (no carrots, only sticks).

# Program Basics

| Year penalty is applied | FY 2013 | FY 2014 | FY 2015 | FY 2016 | FY 2017 |
|---|---|---|---|---|---|
| Period of measurement | June 2008-July 2011 | June 2009-July 2012 | June 2010-July 2013 | June 2011-July 2014 | June 2012-July 2015 |
| Targeted conditions | AMI<br>Heart failure<br>Pneumonia | AMI<br>Heart failure<br>Pneumonia | AMI<br>Heart failure<br>Pneumonia<br>COPD<br>TKA/THA | AMI<br>Heart failure<br>Pneumonia<br>COPD<br>TKA/THA | AMI<br>Heart failure<br>Pneumonia<br>COPD<br>TKA/THA<br>CABG |
| Maximum rate of penalty | 1% | 2% | 3% | 3% | 3% |

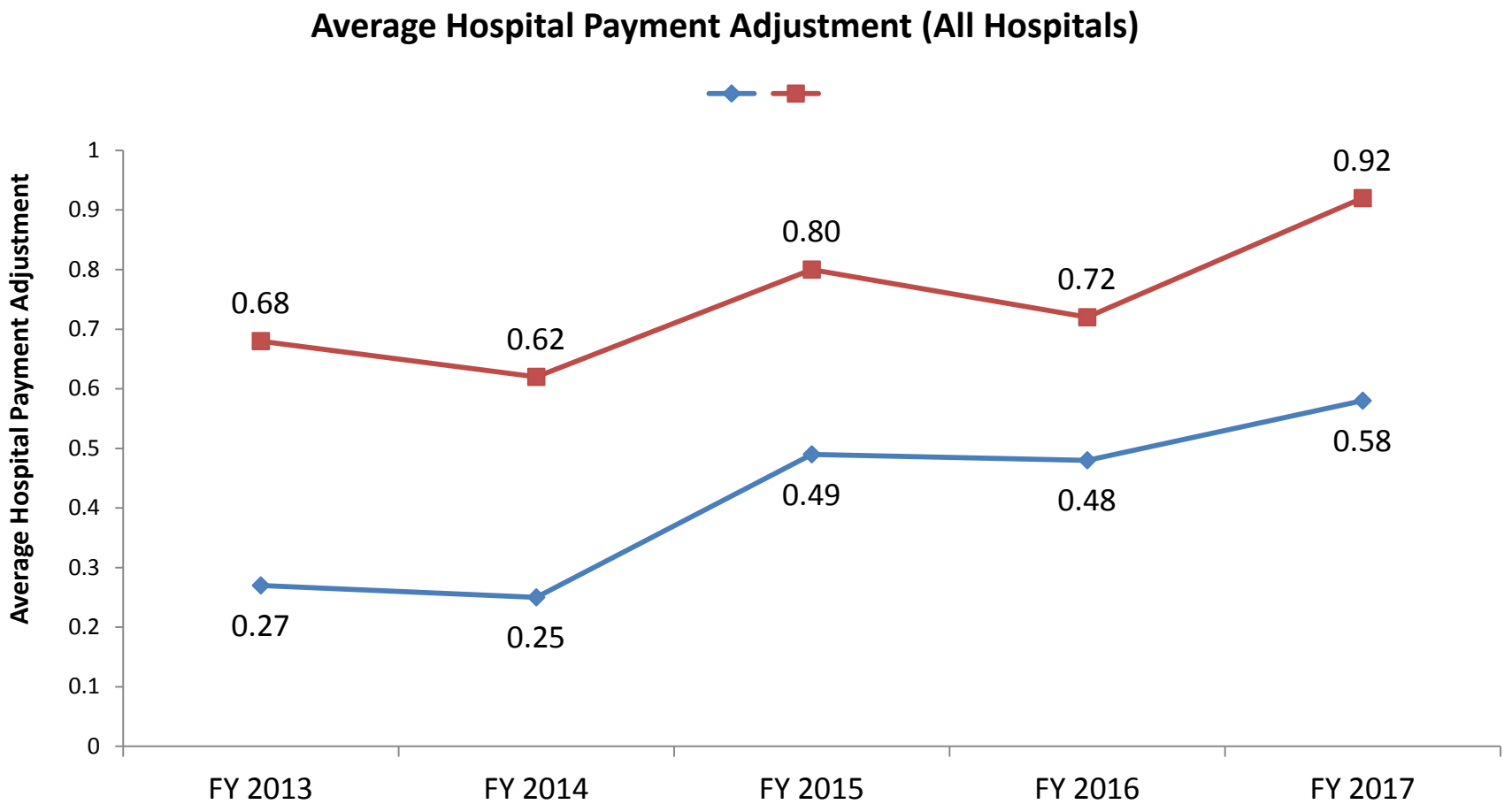
# FINANCIAL IMPACT OF HRRP PENALTIES

# Financial Impact of the HRRP Penalties - National

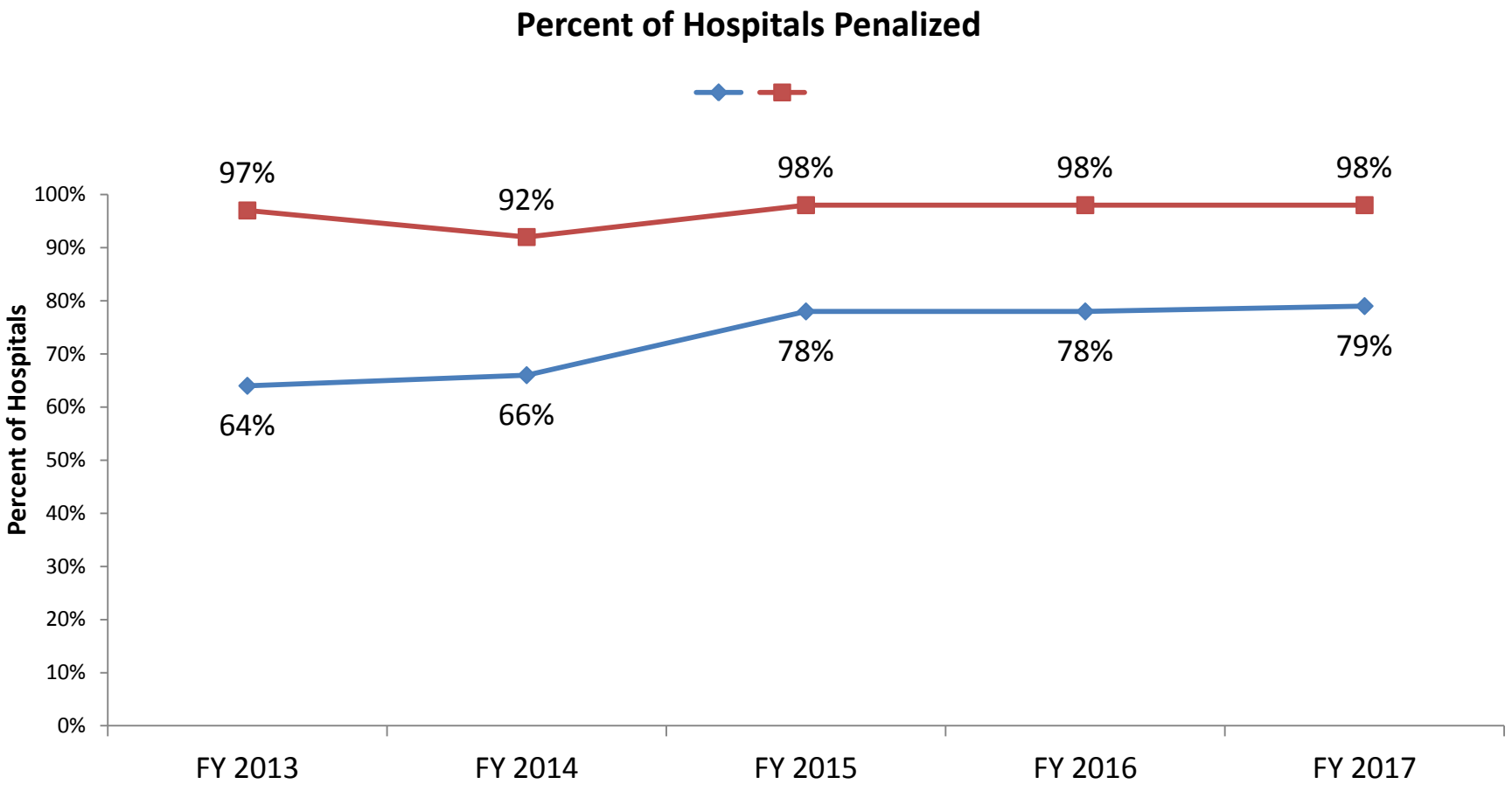
| Year penalty is applied | FY 2013 | FY 2014 | FY 2015 | FY 2016 | FY 2017 |
|---|---|---|---|---|---|
| Maximum penalty rate | 1% | 2% | 3% | 3% | 3% |
| Average hospital payment adjustment (all hospitals) | -0.27% | -0.25% | -0.49% | -0.48% | -0.58% |
| Average hospital payment adjustment (penalized hospitals) | -0.42% | -0.38% | -0.63% | -0.61% | -0.74% |
| Percent of hospitals penalized | 64% | 66% | 78% | 78% | 79% |
| CMS estimate of total penalties | $290M | $227M | $428M | $420M | $528M |

Source: Boccuti and Casillas, Kaiser Family Foundation Issue Brief, 2017

# Financial Impact of the HRRP Penalties – New Jersey

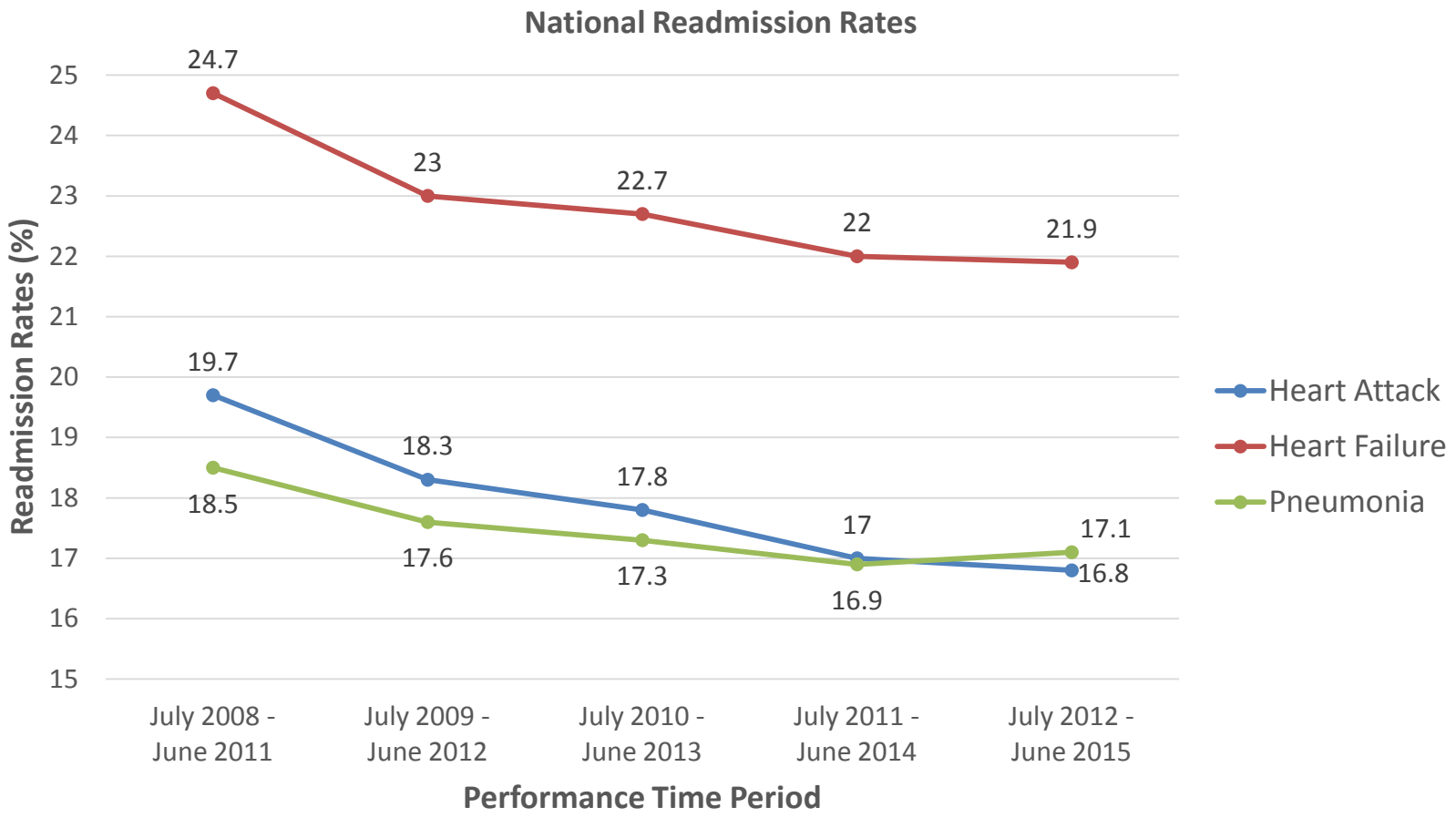


# Financial Impact of the HRRP Penalties – New Jersey



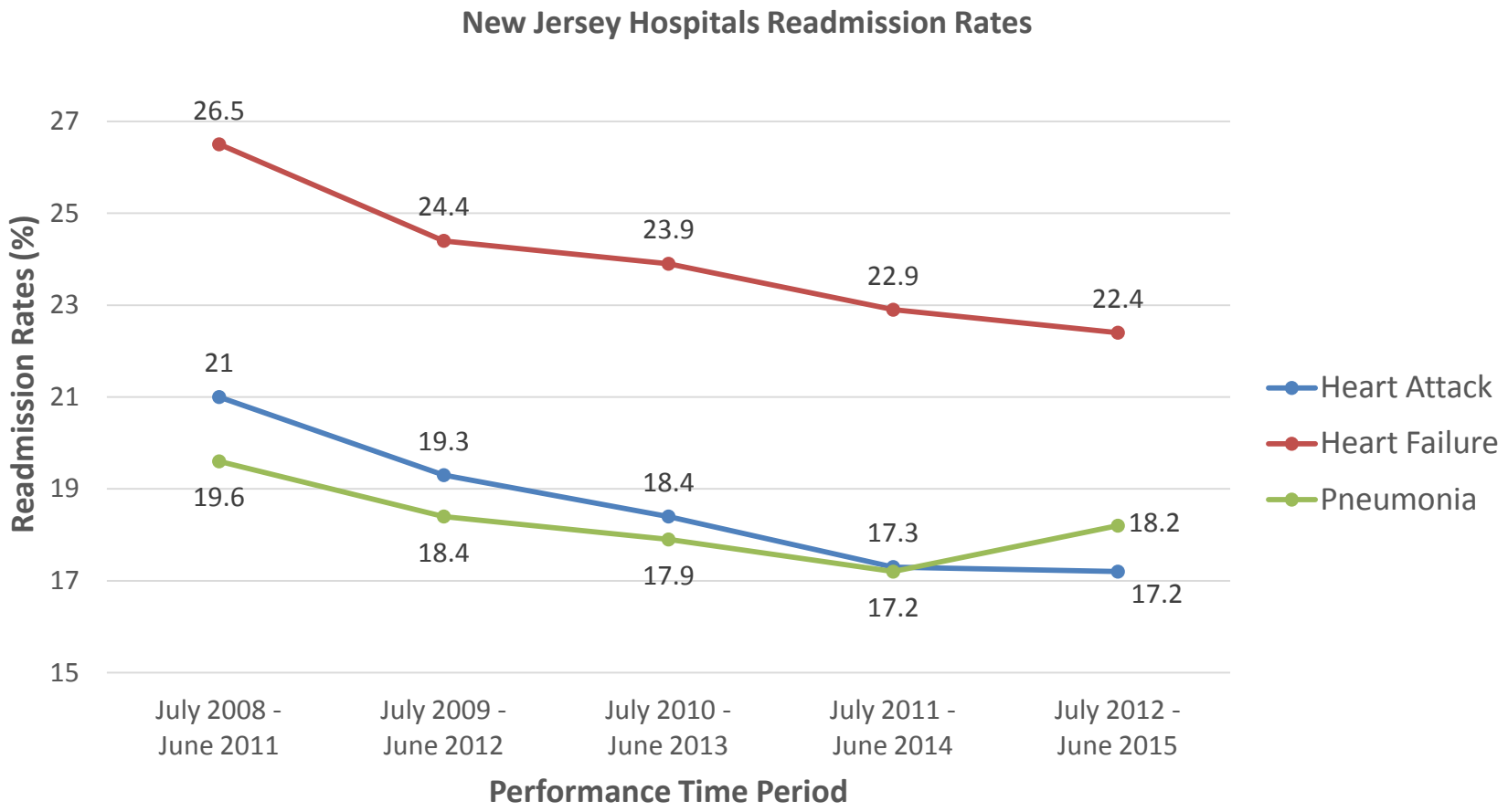
# SYSTEM-WIDE EFFECTS OF HRRP ON HOSPITAL READMISSIONS

# National Readmission Rate Trends




Source: KNG Health Consulting analysis of Hospital Compare data.

# New Jersey Hospitals Readmission Rate Trends




Source: KNG Health Consulting analysis of Hospital Compare data.

# Need for More In-depth Analysis

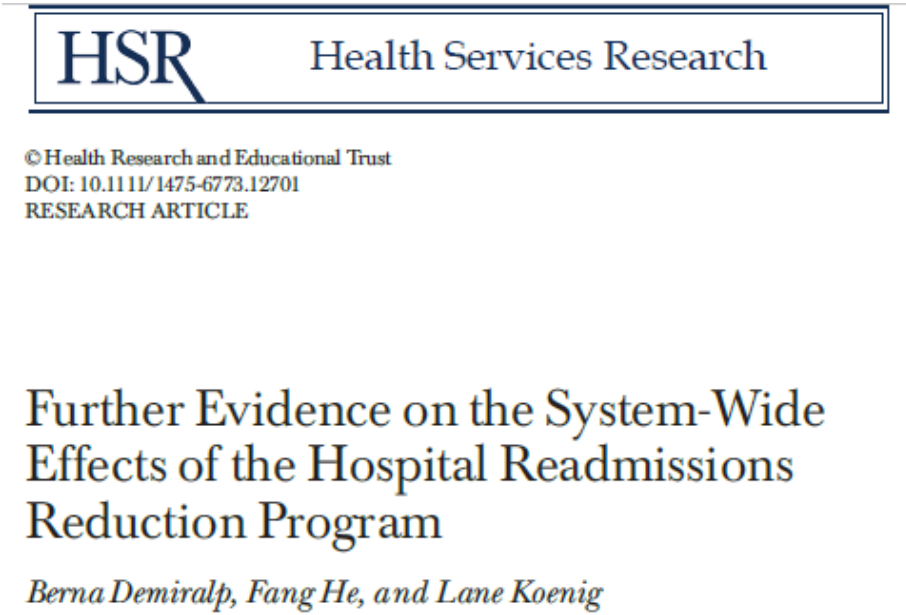
The analysis of Hospital Compare data shows declines in national readmission rates for targeted conditions in 2012. But this analysis is limited and raises two questions:

1. What was the change in readmission rate if we take into account underlying trends in readmission before the HRRP?
   - HRRP can lead to both a “level” and “slope” effect.
2. How did the readmission rates for non-targeted conditions and populations (non-Medicare) change after the HRRP?
   - Is there empirical evidence for spillover effects of HRRP into non-targeted conditions and populations?

# System-wide Effects of HRRP

Demiralp, Koenig, Fang (*HSR*, 2017) examine:

- the change in readmission rates after HRRP taking into account underlying trends in readmissions
- the change in readmission rates for non-targeted conditions and non-Medicare populations



# Study Objective and Motivation

- Objective: To investigate the system-wide effects, including spillover effects, that HRRP had on hospital readmissions.
- Examining spillover effects of HRRP is important.
  - Shows the program's full impact and potential unintended consequences.
  - Provides insight into the mechanism driving hospitals' response to the HRRP.
- Hospital Response to HRRP
  - Hospitals may shift resources away from non-targeted conditions and populations → non-targeted readmissions increase.
  - Hospitals may implement broad-based interventions to reduce readmissions → non-targeted readmissions decrease.
  - Hospital respond to non-financial incentives inherent in the HRRP → non-targeted readmissions decrease.

# Study Questions

1. Did Medicare readmission trends in readmissions change after HRRP?
    - For targeted conditions
    - For non-targeted conditions
2. Were reductions in non-targeted readmissions larger in hospitals that had the greatest readmission reduction in targeted conditions?
3. Were reductions in readmissions larger for non-targeted conditions that are related to the targeted conditions?
4. Did readmission trends in targeted conditions for non-Medicare patients change after the start of the HRRP?

# Methods

- We examined the change in the readmission trends after the HRRP in the following 3 populations:
  1. Medicare beneficiaries hospitalized for a targeted condition
  2. Medicare beneficiaries admitted to hospital for non-targeted conditions
  3. Non-Medicare (Medicaid and Privately Insured) beneficiaries in FL and CA admitted to hospital for targeted conditions
- We conducted an interrupted time series analysis to compare the time trends in 30-day all-cause readmission rates before and after the HRRP.
- We used logistic regression to model the probability of readmission, controlling for patient- and hospital-level covariates.
- Start of the HRRP: passage of the ACA in March 2010.

# Models

| | Targeted Medicare Readmissions | Non-Targeted Medicare Readmissions – Base Model | Non-Targeted Medicare Readmissions – Expanded Model | Non-Medicare Readmissions for Targeted Conditions |
|---|---|---|---|---|
| Data Source | 100% Medicare Inpatient Claims | 100% Medicare Inpatient Claims | 100% Medicare Inpatient Claims | State Inpatient Database (SID) for FL and CA |
| Period of Analysis | 2007-2013 | 2007-2013 | 2007-2013 | FL: 2007-2013<br>CA: 2007-2011 |
| Conditions | Targeted conditions:<br>• Pneumonia<br>• Heart failure<br>• AMI | Non-targeted conditions grouped into:<br>• Cardiovascular<br>• Cardiorespiratory<br>• Neurology<br>• Surgery<br>• Medicine | Non-targeted condition cohorts:<br>• Cardiovascular<br>• Cardiorespiratory<br>• Neurology<br>• Surgery | Targeted conditions:<br>• Pneumonia<br>• Heart failure<br>• AMI |
| Conditions estimated separately? | Separately | Separately | Pooled | Separately |

# Model Covariates and Risk Adjustment

| All models include | | Additional variables in expanded model |
|---|---|---|
| Treatment and trend variables | Trend variable, post-ACA indicator, interaction term | • Indicators for whether the hospital was in the bottom 25% or middle 50% in reducing readmissions for targeted conditions<br>• Indicators for non-targeted condition category (cardiovascular/cardiorespiratory condition category vs. neurology/surgery) |
| Patient-level variables | Age, sex, median hh income in patient's county, comorbid conditions and illness severity based on CMS' risk-standardized readmission measure specifications | |
| Hospital-level variables | Bed size, teaching status, # post-acute care providers in market area, % total inpatient days that are Medicare, readmission rate prior to HRRP | |

# How did targeted Medicare readmissions change after the ACA?

**Estimates from Logistic Regression of Targeted Medicare Readmissions**

| | AMI | Heart Failure | Pneumonia |
|---|---|---|---|
| Number of admissions | 1,184,677 | 2,630,397 | 2,161,482 |
| Difference in readmission trend slopes, pre-post (odds ratios) (1) | 0.979*** | 0.982*** | 0.984*** |
| **Difference in readmission rate, 2013Q4 - 2010Q1 (percentage point)(2)** | **-4.5** | **-3.9** | **-2.6** |

1. Reduction in the slope of readmission trend after the HRRP (odds ratio < 1).
2. Reduction in readmission rates for targeted conditions between 2.6 and 4.5 percentage points between 2010 and 2013 (odds ratio < 1).

Source: KNG Health Consulting analysis of Medicare claims data.
*** p<0.01

# How did non-targeted Medicare readmissions change after the ACA?

**Estimates from Regression of Non-Targeted Medicare Readmissions**

| | Cardio-respiratory | Cardio-vascular | Neurology | Surgery | Medicine |
|---|---|---|---|---|---|
| # admissions | 3,287,316 | 5,160,353 | 2,958,644 | 11,660,645 | 19,493,873 |
| Difference in readmission slopes, pre-post (odds ratios)[(1)] | 0.984*** | 0.988*** | 0.981*** | 0.980*** | 0.985*** |
| **Difference in readmission rate, 2013Q4 - 2010Q1 (percentage point)[((2)]** | **-3.6** | **-2.1** | **-2.7** | **-2.1** | **-3.3** |

1. Reduction in the slope of readmission trend after the HRRP (odds ratio < 1).
2. Reduction in readmission rates for targeted conditions between 2.1 and 3.6 percentage points between 2010 and 2013 (odds ratio < 1).

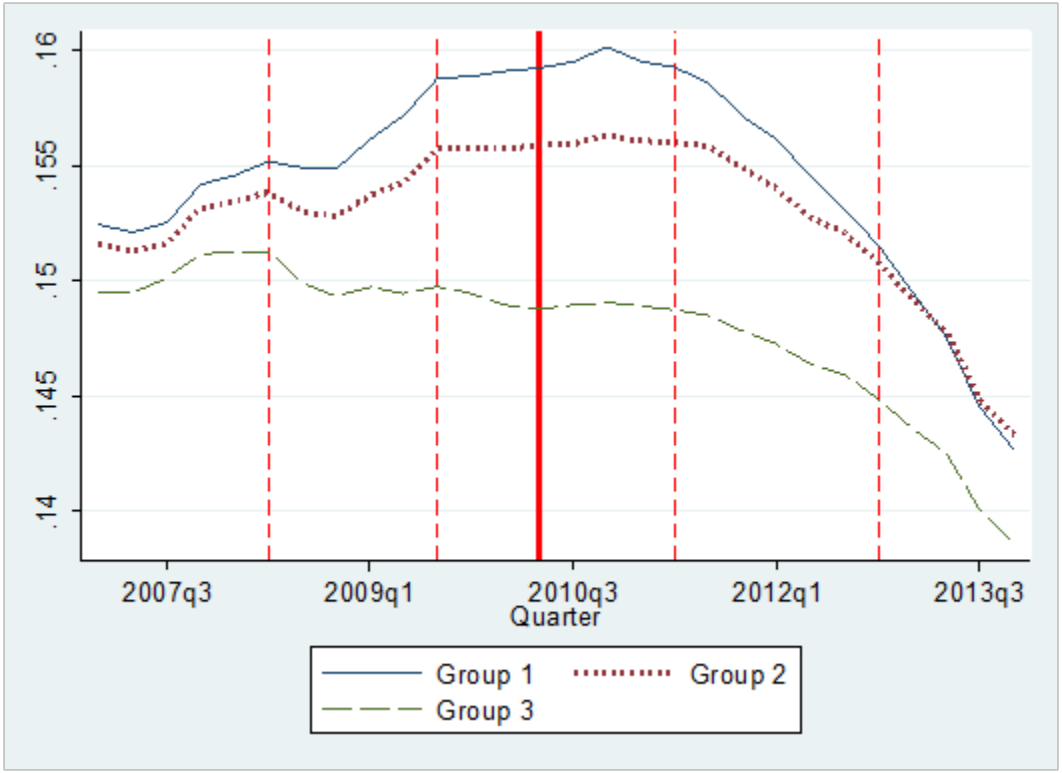
Source: KNG Health Consulting analysis of Medicare claims data.
*** p<0.01

# Non-targeted Medicare Readmissions

- Were reductions in non-targeted readmissions larger in hospitals with the greatest readmission reduction in targeted conditions?
- Were reductions in non-targeted readmissions larger for conditions that are similar to the targeted conditions?

# Were reductions in non-targeted readmissions larger in hospitals with the greatest readmission reduction in targeted conditions?

## Trends in Unadjusted Readmission Rates for Non-Targeted Conditions




Group 1: hospitals in top 25% in targeted readmission reductions

Group 2: hospitals in middle 50% in targeted readmission reductions

Group 3: hospitals in bottom 25% in targeted readmission reductions

Source: KNG Health Consulting analysis of Medicare claims data.

# Estimates from Logistic Regression of Non-Targeted Medicare Readmissions - Expanded Model (Odds ratios)

| | Cardiorespiratory and cardiovascular (I) | Neurology and surgery (II) | Difference (I-II) |
|---|---|---|---|
| Difference in slope for Group 1 hospitals (post-pre) | 0.981*** | 0.975*** | 1.005*** |
| Difference in slope for Group 3 hospitals (post-pre) | 0.993*** | 0.986*** | 1.007*** |
| Difference, (Group 3 - Group 1) | 1.013*** | 1.011*** | 1.002 |

- Larger reductions in slope of readmissions trend for Group 1 compared to Group 3 hospitals.
- Larger reductions in slope of readmissions trend for neurology and surgery cohorts compared to cardiorespiratory and cardiovascular cohorts.

Source: KNG Health Consulting analysis of Medicare claims data.
Notes: Group 1: hospitals in top 25% in targeted readmission reductions; Group 3: hospitals in bottom 25% in targeted readmission reductions. Odds ratios from logistic regression estimation are reported.
*** p<0.01; Odds ratios from logistic regression estimation are reported.

# How did non-Medicare readmissions for targeted conditions change after the ACA?

| | AMI | Heart Failure | Pneumonia |
|---|---|---|---|
| **California (2007-2011)** | | | |
| Difference in readmission trend slopes, pre-post (odds ratios) | 1.001 | 0.987 | 1.009 |
| **Florida (2007-2013)** | | | |
| Difference in readmission trend slopes, pre-post (odds ratios) | 1.016 | 0.991 | 0.996 |

- No statistically significant difference in readmission trend slopes before and after the HRRP.

Source: KNG Health Consulting analysis of Medicare claims data.
Note: Odds ratios from logistic regression estimation are reported.
*p<0.1

# Findings

1. Medicare readmissions for both targeted and non-targeted conditions decreased after the HRRP.
   - Reductions between 2.6 and 4.5 percentage points for targeted conditions
   - Reductions between 2.1 and 3.6 percentage points for non-targeted conditions
   - These findings are consistent with other studies (Carey and Lin 2015, Zuckerman et al. 2016, Deasi et al. 2016).

# Findings (cont.)

2. Hospitals with largest reductions in targeted conditions experienced larger reductions in non-targeted readmissions relative to other hospitals.
3. Readmission reductions were smaller for non-targeted conditions that are related to the targeted conditions relative to other non-targeted conditions.
4. Readmission trends for non-Medicare patients treated for targeted conditions in FL and CA did not change after the HRRP.

# What do these findings show?

- Our findings support HRRP is associated with reductions in targeted readmission rates.
- They are also consistent with spillover benefits associated with HRRP.
  - Spillover effects may be working in more complex ways than anticipated.
- Reductions in readmissions in non-targeted conditions may be due to:
  - Broad-based readmission reduction initiatives
  - Incentives, other than penalty, HRRP provides to hospitals
- There may be limits to the spillover effects of HRRP
  - We did not find evidence of spillover effects for non-Medicare populations in 3 states.

# Limitations of the Study

- Policies and programs other than HRRP may have contributed to the reductions in readmissions.
  - Public reporting of readmissions
- Patient comorbid conditions and illness severity may be partially captured in the analysis as they are based only on the index hospital claim.
- Our results on the non-Medicare population based on data from Florida and California may not be generalizable to the rest of the country.

# POLICY ISSUES RELATED TO HRRP

# Policy Issues

Despite the empirical evidence suggesting its success in reducing readmissions, the HRRP has remained controversial.

Various criticisms of the HRRP include:

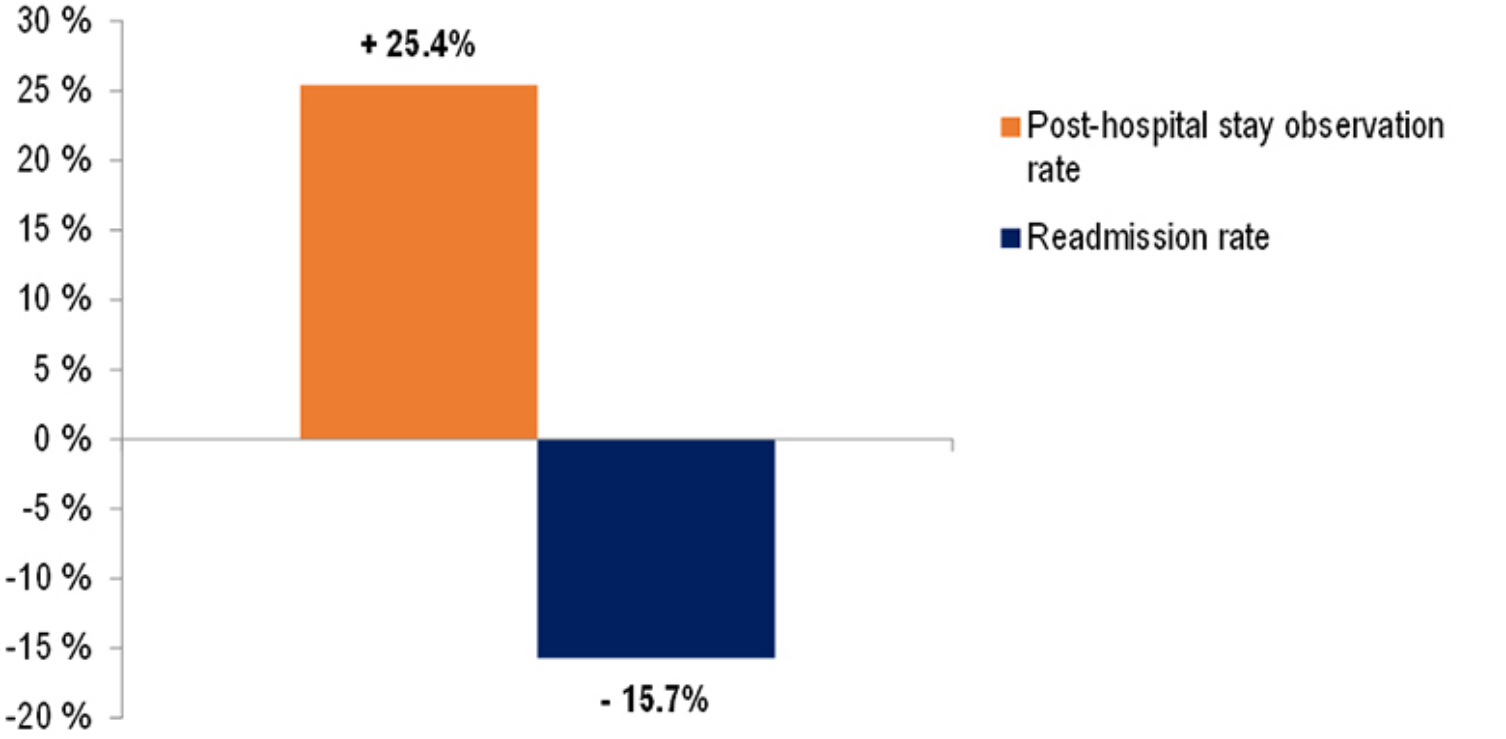
1. Observation stays
2. Risk adjustment for socioeconomic status
3. Persistent penalization of hospitals
4. Mortality – readmissions relationship

# 1. Observation Stays

- There has been concern that reductions in readmissions may be achieved by keeping patients in observation units instead of readmitting them to the hospital.
- During the period of falling readmissions, observation stays have been increasing.
  - Observation stays doubled between 2006-2012 and continued to increase after HRRP.
- Can the changes in readmissions and observation stays be correlated?

# Changes in readmission and 30-day return observation rates

**(Patients in traditional Medicare, top ten percent of hospitals with largest drop in readmission rates between 2011-2012)**

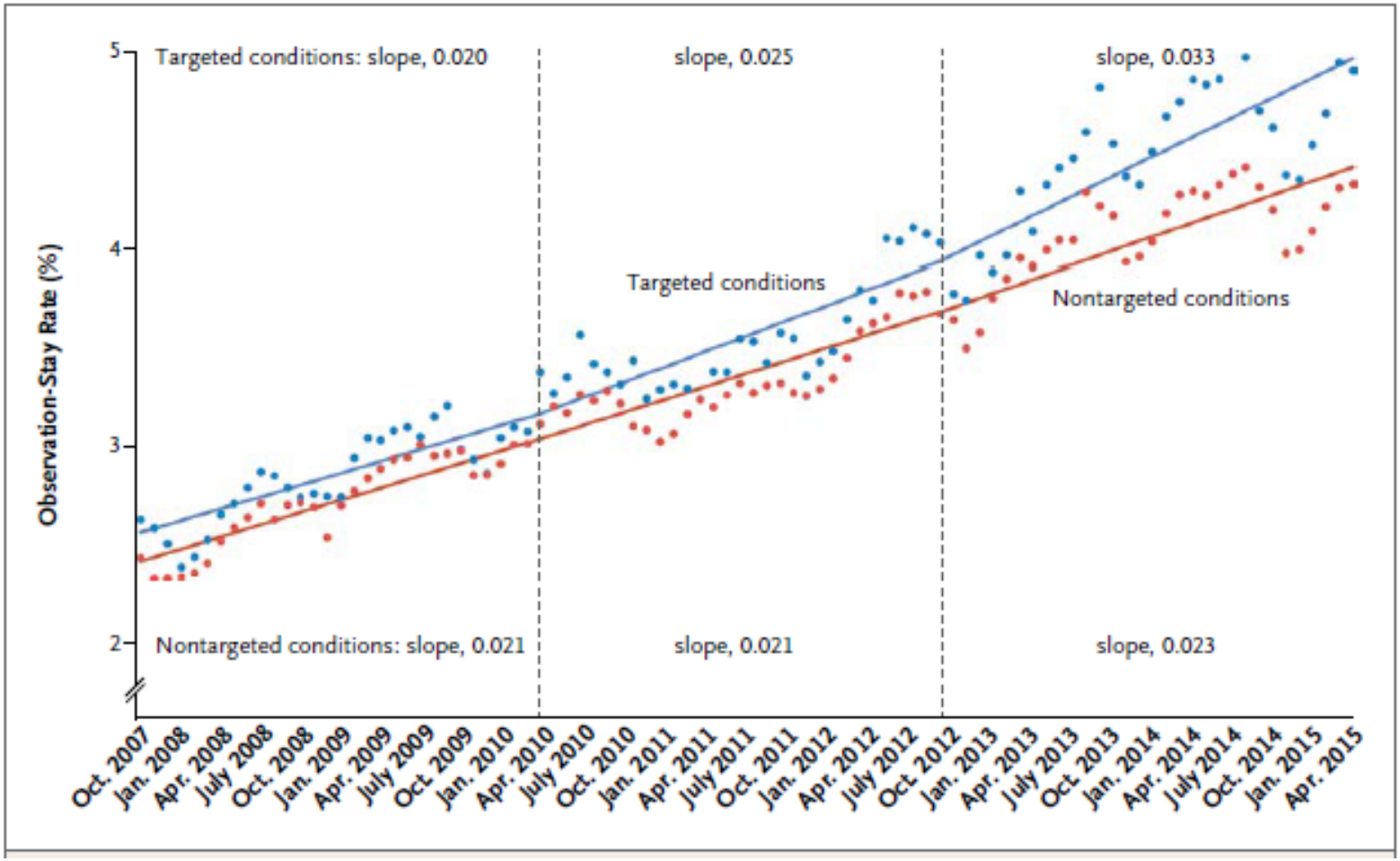



Source: AARP Public Policy Institute Re-analysis of Medicare Data (Medicare & Medicaid Research Review 2014:v4, no.1, p.E1-E13)

# Zuckerman et al. (*NEJM*, 2016)

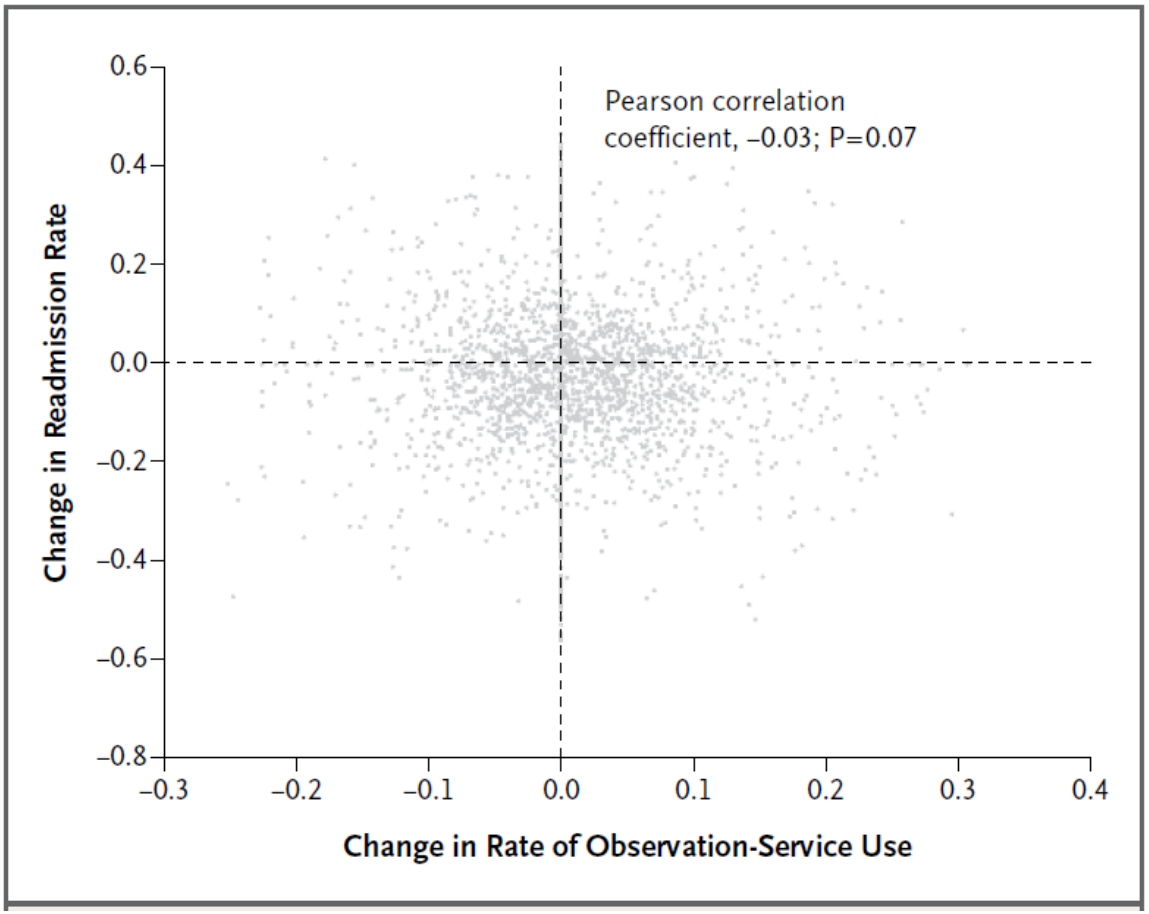
- Zuckerman et al. (*NEJM*, 2016) studied:
  - The change in the trend of observation stays after HRRP
  - Correlation between observation stays and readmissions
- Authors found:
  - the rate of observation stays was increasing both before and after HRRP.
  - But, there was no significant relationship between increases in observation service use and reductions in readmissions after HRRP.

# Change in Observation Stays within 30 Days after Discharge




Source: Zuckerman et al. NEJM, 2016.

# Relationship between Change in Readmission Rate and Change in Observation Stay Rate (2010-2012)




Source: Zuckerman et al. NEJM, 2016.

# 2. Risk Adjustment for Socioeconomic Status

- There is no adjustment for the socioeconomic status (SES) in the calculation of readmission measure.
- Opponents of including SES as a risk-adjustment factor argue that adjusting for SES might mean holding hospitals that serve poor and vulnerable populations to a lower performance standard.
- Proponents argue
  - Socioeconomically disadvantaged populations are more likely to face external factors that contribute to higher readmissions.
  - Safety-net hospitals and hospitals caring for vulnerable populations are more likely to face readmission penalties due to factors outside hospitals' control.

# Socioeconomic determinants of readmissions: Empirical Evidence

- Socioeconomic determinants of readmissions has been an active research area.
- Socioeconomic factors are important determinants of readmissions.
  - Broad range of socioeconomic and personal factors have been shown to influence readmissions (e.g., race, ethnicity, education, income, payer, employment status, home stability).[1]
- Socioeconomic factors explain differences in hospital performance in readmission rates.
  - Studies have shown that teaching hospitals, large hospitals, and hospitals treating a greater proportion of low income or dual-eligible patients are more likely than other hospitals to be penalized under the HRRP.[2]

[1] Herrin et al., Health Services Research, 2015; Hu et al., Health Affairs, 2014; Glance, et al., Ann Surg., 2016.
[2] Joynt and Jha, JAMA, 2013; Sheingold et al., Health Affairs, 2016; Gu et al., Health Serv Res., 2014.

# Socioeconomic determinants of readmissions: Empirical Evidence (cont.)

- Recently, Thompson et al. (Health Affairs, 2017) examined the relationship between hospital characteristics and penalty status.
- Authors showed that hospitals that disproportionately treat socioeconomically disadvantaged patients, as measured by disproportionate share hospital index, were more likely to receive penalties in all 5 years of HRRP.

# Characteristics of Hospitals Penalized Under HRRP

| Hospital characteristics | Penalized all 5 years ($n$ = 1,692) No. | Percent | Penalized fewer than 5 years ($n$ = 1,537) No. | Percent | Odds ratio Crude | Adjusted |
|---|---|---|---|---|---|---|
| **LOCATION** | | | | | | |
| Urban | 1,260 | 74.5% | 1,052 | 68.5% | 1.35**** | 1.29** |
| Rural | 432 | 25.5 | 485 | 31.6 | Ref | Ref |
| **TEACHING STATUS** | | | | | | |
| Major | 196 | 11.6 | 75 | 4.9 | 2.56**** | 2.31**** |
| Minor | 249 | 14.7 | 243 | 15.8 | 1.00 | 0.92 |
| Nonteaching | 1,247 | 73.7 | 1,219 | 79.3 | Ref | Ref |
| **OWNERSHIP** | | | | | | |
| Not-for-profit | 1,051 | 62.1 | 968 | 63.0 | 0.89 | 0.79** |
| Public | 376 | 22.2 | 308 | 20.0 | 0.83 | 0.71*** |
| For-profit | 265 | 15.7 | 261 | 17.0 | Ref | Ref |
| **HOSPITAL SIZE (NO. OF BEDS)** | | | | | | |
| Large (300 or more ) | 487 | 28.8 | 295 | 19.2 | 2.81**** | 4.58**** |
| Medium (100–300) | 843 | 49.8 | 627 | 40.8 | 2.28**** | 3.02**** |
| Small (fewer than 100) | 362 | 21.4 | 615 | 40.0 | Ref | Ref |
| **MEDICARE PROPORTION QUARTILE** | | | | | | |
| 4th (highest) | 423 | 25.0 | 385 | 25.1 | 1.09 | 2.01**** |
| 3rd | 426 | 25.2 | 380 | 24.7 | 1.12 | 1.54**** |
| 2nd | 438 | 25.9 | 369 | 24.0 | 1.18* | 1.32** |
| 1st (lowest) | 405 | 23.9 | 403 | 26.2 | Ref | Ref |
| **DISPROPORTIONATE-SHARE HOSPITAL INDEX QUARTILE** | | | | | | |
| 4th (highest) | 528 | 31.2 | 280 | 18.2 | 2.78**** | 2.61**** |
| 3rd | 457 | 27.0 | 349 | 22.7 | 1.93**** | 1.91**** |
| 2nd | 381 | 22.5 | 427 | 27.8 | 1.32*** | 1.17 |
| 1st (lowest) | 326 | 19.3 | 481 | 31.3 | Ref | Ref |

Source: Thompson et al. Health Affairs, 2017.

# Adjusting for SES: Recent Developments

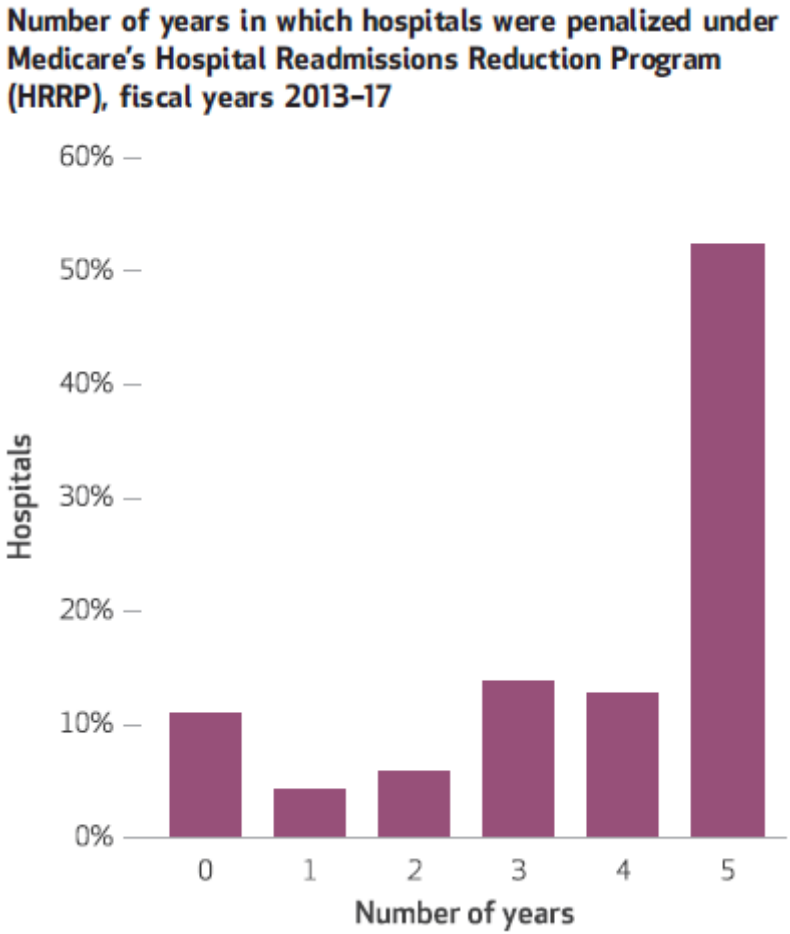
- December 2016 HHS-ASPE Report to Congress Office
  - Medicare beneficiaries with social risk factors fared worse on process, clinical outcome and patient experience measures.
  - Providers that disproportionately serve patients with social risk factors tended to perform worse on quality measures, including in HRRP.
  - The most powerful predictor of poor performance was dual eligibility status.
- 21st Century Cures Act mandated CMS to take into account the proportion of the hospital patient population that are dual eligible for Medicare and Medicaid when calculating payment reductions under HRRP.

# Adjusting for SES: Recent Developments (cont.)

- Starting in FY 2019, HRRP penalties will be based on a hospital's performance relative to other hospitals with a similar proportion of dual eligible patients.
- This will limit the impact of SES in penalty calculation without adjusting for SES directly.
- CMS predicts that under the new rule,
  - Percentage of safety-net hospitals facing penalties will decrease from 63% to 54%.
  - Among hospitals not eligible for disproportionate-share payments, percentage penalized will increase from 59% to 65%.

# 3. Persistent Penalization of Hospitals

- Persistent penalization of hospitals may limit hospitals' ability to invest in care improvement initiatives.
  - It may lead to greater disparities in quality measures between high-performing and low-performing hospitals.
- The majority of hospitals have been penalized in all 5 years of HRRP.
- Safety-net hospitals are more likely to be penalized in all 5 years.




Source: Thompson et al. Health Affairs, 2017.

# Alternative Approaches

1. Compare hospital performance to a fixed readmission target or prior performance instead of comparing to national average.
   - Fixed rather than a moving target may reduce persistent penalization.
2. Use a hospital-wide readmissions measure instead of condition-specific measures.
   - Hospital-wide measure may have less statistical noise due to larger sample size and may be better at distinguishing between high- and low-performing hospitals.

# 4. Mortality – readmission relationship

- Researchers recognized an inherent relationship between mortality and outcomes.
  - Patients who die after discharge cannot be readmitted.
- What does empirical evidence show?
  - Negative correlation between mortality and readmissions for heart failure patients.
- Concern for unintended consequences of readmission policy
  - Could readmission reduction initiatives inadvertently lead to increases in mortality?
- Use of a combined measure including both readmission and mortality has been suggested to address this potential unintended consequence.

# Empirical evidence on mortality and readmission relationship

- Recent study by Dharmarajan et al. (JAMA, 2017) offer empirical evidence that address this concern.
  - Authors found a small but positive relationship between reductions in 30-day readmission rates and reductions in mortality rates for Medicare beneficiaries hospitalized for AMI, heart failure, and pneumonia.
  - Findings are consistent with the view that efforts to reduce readmissions (e.g., better discharge planning, improved care coordination, and more timely follow-up) also have positive impact on patient mortality.

# FUTURE CONSIDERATIONS FOR HRRP

# Future Considerations

- Empirical evidence suggests that HRRP is associated with system-wide reductions in readmission rates.
- However, persistent penalization of hospitals and leveling out of readmission rates in recent years have spurred discussion on the future of HRRP. These discussion fall in two categories:

1. HRRP needs better measurement and data.

***"We don't have good measures"*** (P. Pronovost, Director of Armstrong Institute for Patient Safety and Quality at Johns Hopkins)

  - Many social risk factors that determine readmissions are not captured on claims data (e.g. health literacy, frailty, ability to drive).
  - Information on social risk factors can also help providers design effective interventions.

# Future Considerations (cont.)

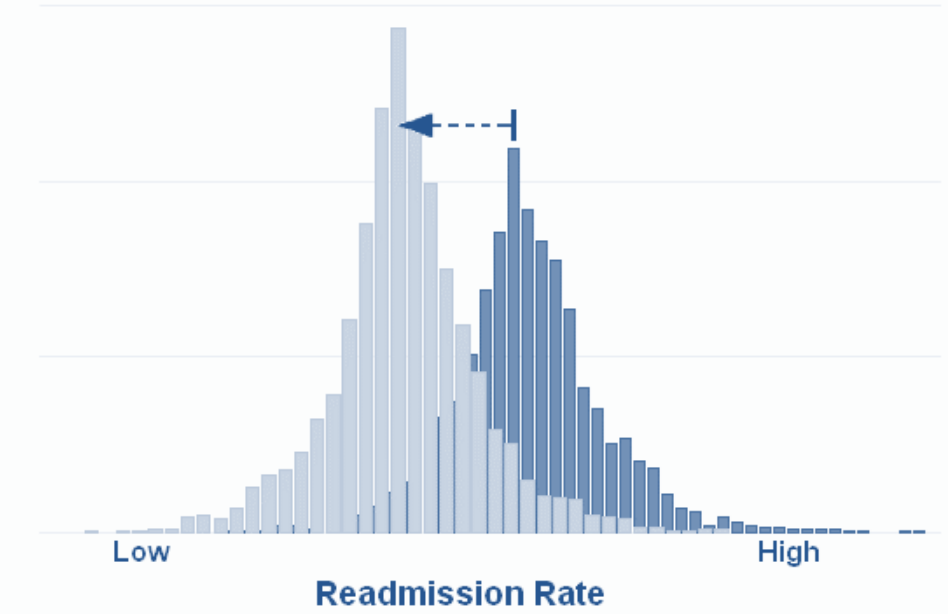
2. Should the HRRP be discontinued?

***"I think when the program was created, it was innovative. But we are moving toward paying for more episodes of care."*** (A. Jha, Harvard School of Public Health)

- Have we reached the limits of what hospitals can accomplish in reducing readmissions?
- Are other value-based models (e.g., ACOs, bundled payments) more effective in improving value of care.

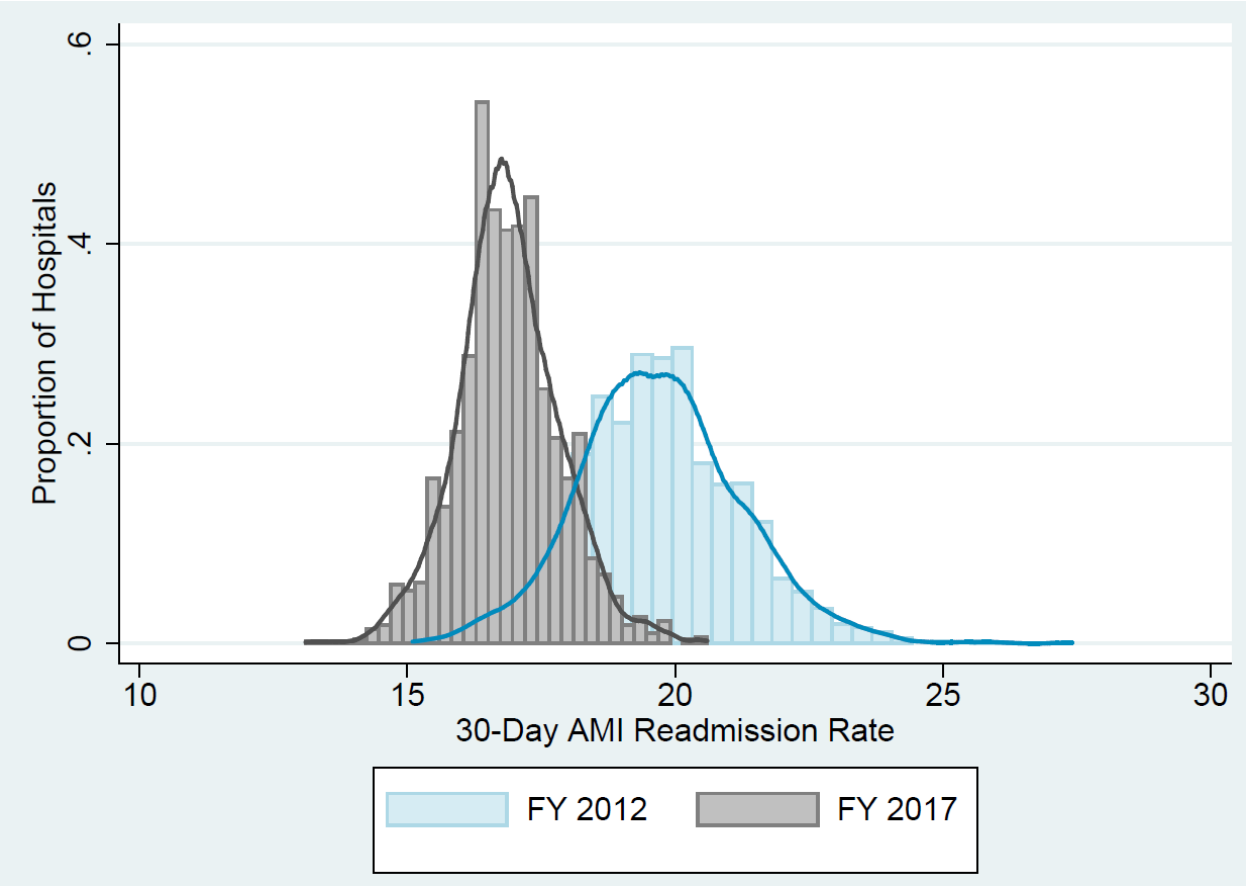
# Have the goals of HRRP been achieved?

- According to CMS, the goals of HRRP are:
  - Improve performance of all hospitals (shifting of the curve)
  - Reduce variation of hospital performance (narrowing of the curve)



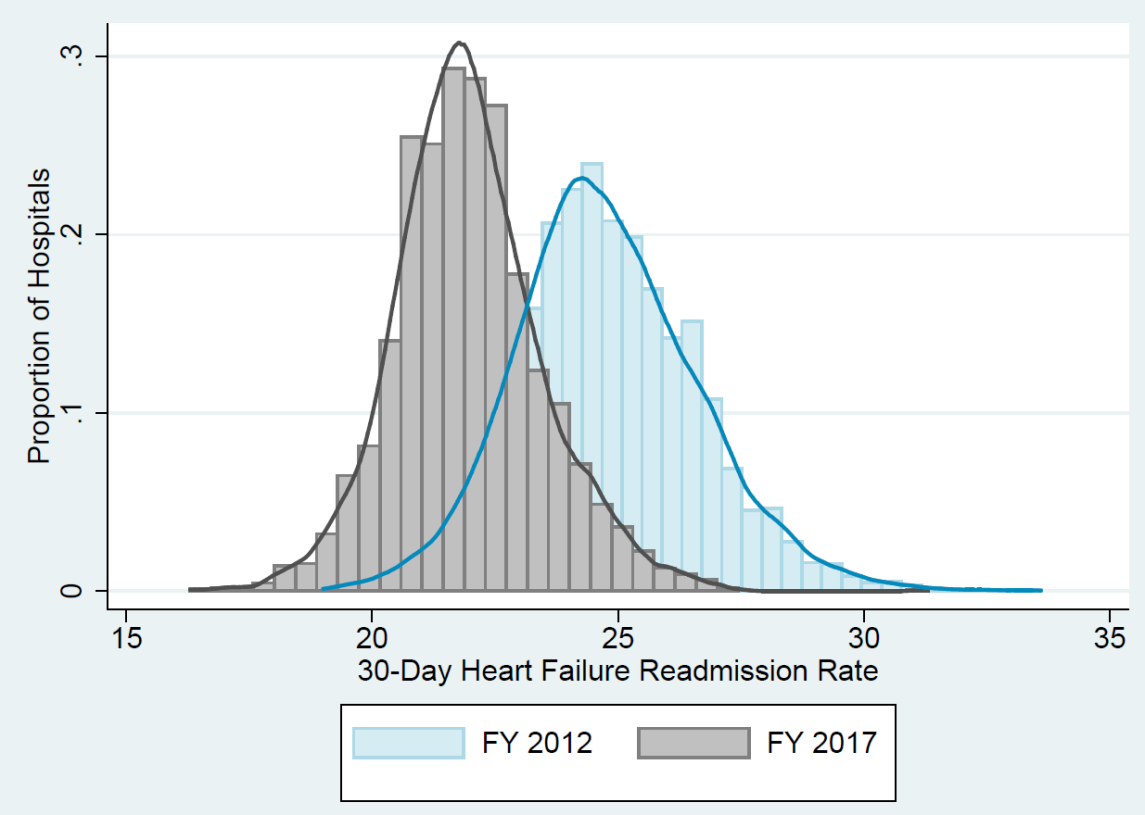

Source: CMS Acute Care and Quality Reporting Programs, May 2015 National Provider Call.

# AMI Readmission Rates



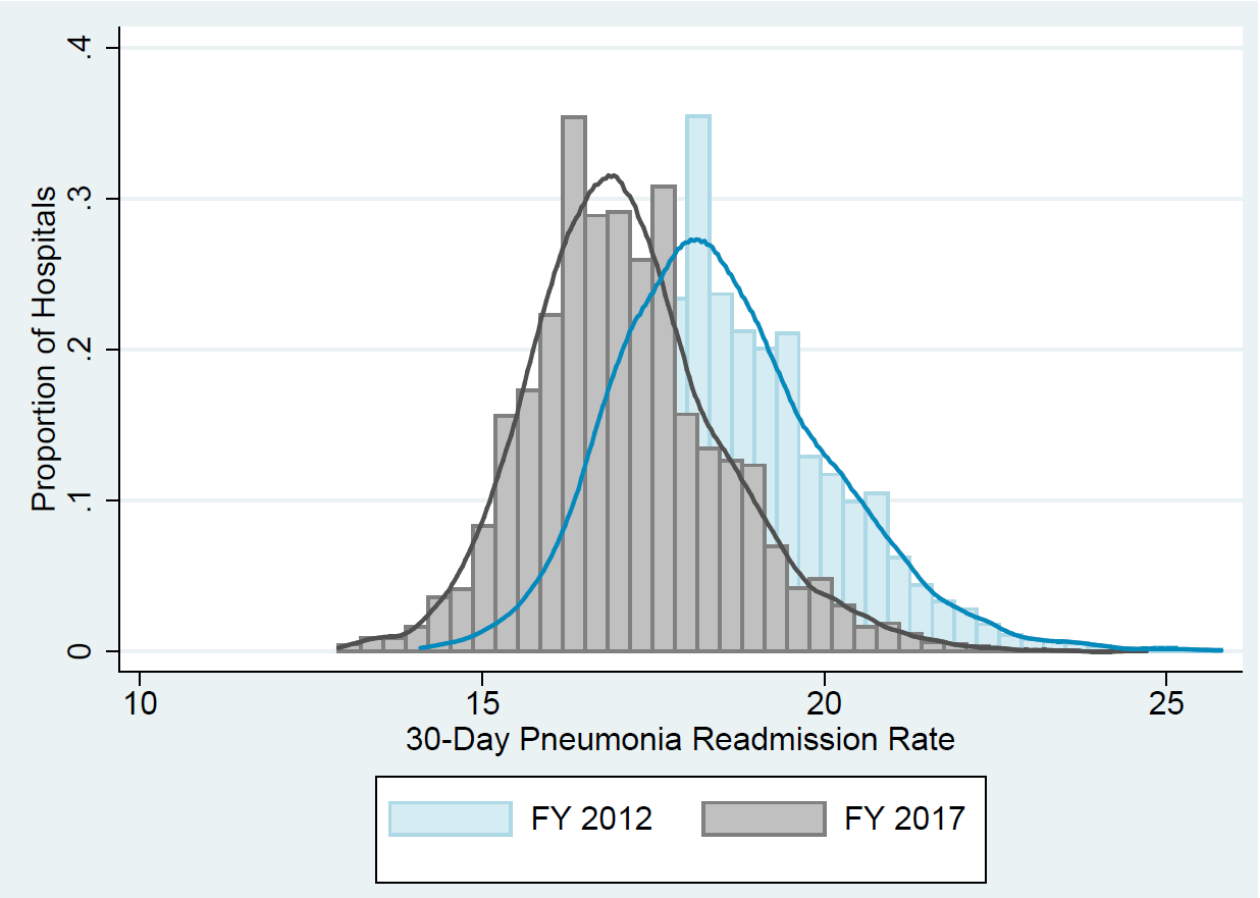

Source: KNG Health Consulting analysis of Hospital Compare data.

# Heart Failure Readmission Rates




Source: KNG Health Consulting analysis of Hospital Compare data.

# Pneumonia Readmission Rates




Source: KNG Health Consulting analysis of Hospital Compare data.

# Final Thoughts: Directions for Future Research

- There has been significant research contributions that have widened our understanding of hospital readmissions and HRRP in recent years.
- But there is still a continuing need for future research to inform policy. Some of these research questions include:
  - How has the distribution of readmission rates across hospitals changed?
  - Why does the spillover benefits of HRRP vary across conditions and patient populations?
  - What drives the positive relationship between readmission and mortality trends after HRRP?
  - How does HRRP compare to other value-based payment models in terms of improving quality and reducing spending?
  - Has HRRP been more effective for certain types of hospitals or communities compared to other value-based payment models?

**Questions?**

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