August 15, 2016

Acumen SNF Payment Research Team
500 Airport Blvd, Suite 365
Burlingame, CA 94010

Dear Acumen SNF Payment Research Team,

Thank you for the opportunity to comment upon the Centers for Medicare and Medicaid Services' (CMS) Skilled Nursing Facility (SNF) proposed payment system redesign concept. My comments are in response to the preliminary design shared during the June 15, 2016 Technical Expert Panel (TEP).

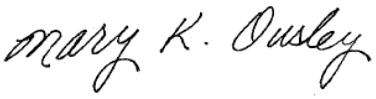
As I have noted at past meetings, I concur the existing SNF prospective payment system (PPS) is in need of improvements and should be modernized in preparation for development and implementation of the Improving Medicare Post-Acute Care Transformation Act of 2014 (IMPACT Act) payment reform efforts. And, I appreciate CMS' efforts in this regard as well as Acumen's research under contract with CMS. Also, I recognize the June 15 presentation and related materials are preliminary and I understand much work is forthcoming. My comments are based on available information presented on June 15 and some information shared following the TEP meeting.

That said, I am deeply troubled by the overall concept, the omission of critical policy initiatives which should be incorporated in payment policy design, and the use of weak, and/or flawed, data. In fact, many of the TEP participants were equally concerned and have been in communication with senior CMS staff on the scope and proposal to-date. I offer these comments, while they are direct and assertive, collegially and in the spirit of collaboration. My tone and level of detail are intended to convey my concern that the Acumen concept will not improve the existing PPS nor aid CMS in aligning the SNF PPS with its overarching Medicare payment policy goals.

Finally, I hold a number of leadership positions in the American Health Care Associations (AHCA). These roles provide access to research materials developed by the Association. Throughout my comments, I have used AHCA research, work completed by other researchers, and CMS' own work to support my points. To be clear, the comments, below, represent my perspective as TEP participant advising a CMS contractor and are not formal AHCA policy.

In conclusion, again, I offer these comments constructively and collegially. And, I very much would like to schedule time for AHCA researchers to speak with the Acumen team so they may provide in depth explanations of their work. To schedule a call with me as well as the AHCA researchers, please contact me at mousley@pruitthealth.com or (678) 533-6300.

Respectfully,



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Mary K. Ousley SNF PPS Redesign
June 15 TEP Comments

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Executive Summary

Introduction

Acumen presented the work as framed by three key factors: 1) proposed changes fall within existing statutory authority; and 2) currently available administrative data would be used. Third, while not explicitly stated as a framing factor for the work, Acumen indicated that patient characteristics have not changed significantly since 2006-2008 when the Staff Time and Resource Intensity Verification (STRIVE) project was completed. Acumen also notes three major project goals:

1. *Develop alternative approaches that improve adequacy and appropriateness of payment.* With respect, I strongly disagree that the alternative approaches presented on June 15th will improve adequacy and appropriateness of payment. Discussed in detail below, I offer comments on what I believe to be design flaws in the overall concept and serious issues with problematic data sources.

2. *Assess performance of the approach.* Acumen presented an array of statistical analyses during the TEP. I am concerned that the predictive power of the presented statistics is overstated and am confused about the lack of methodological detail, as well as by the clinical analysis, associated with the proposed approach. Pursuing a reliable impact analysis without clarification on these points would be quite challenging if not impossible.

3. *Select among alternatives and support implementation of revised payment approach.* Related to the point above, I do not understand how Acumen could select among alternatives or aid CMS in decision making based upon the information shared at the June 15 meeting.

I recognize a fourth TEP to further flesh out the June 15 content is planned. However, I believe the foundational concepts presented on June 15 are so flawed further work could only exacerbate my confusion and concerns. Below, I offer a summary of my detailed comments and suggestions.

1. ***Misalignment with Medicare Policy:*** I am concerned Acumen's proposal largely is out of step with CMS efforts to further expand person-centered services, reduce fragmentation, and improve quality for beneficiaries by moving from volume to value in payment. First, CMS long has made person-centered care a priority. Since the 1990s, CMS has worked with states to develop person-centered care planning policies and procedures in Medicaid. And, in Medicare, CMS has worked with the SNF profession to develop the Artifacts of Culture Change.[1] Most recently, in CMS' proposed regulation, Medicare and Medicaid Programs; Reform of Requirements for Long-Term Care Facilities, Proposed Rule,[2] the Agency discusses at length the need to formally build person-centered planning into the SNF Requirements of Participation (RoP). Specifically, on page 42185, the Agency states, "The Department of Health and Human Services has issued guidance for implementing person-centered planning and self-direction in home and community-based services programs, as set forth in section 2402(a) of the Affordable Care Act. The principles in that guidance

[1] Information on the Artifacts of Culture Change may be accessed, here.
[2] 80 Fed. Reg. 42, 168 (July 16, 2015)

regarding dignity and self-direction apply equally to individuals who reside in a nursing facility. http://www.acl.gov/Programs/CDAP/OIP/docs/2402-a-Guidance.pdf. Our proposed requirements support those principles."

I strongly support the concept of person-centered services both in culture change settings as well as for all SNF and nursing facility (NF) patients and residents, respectively. And, I have worked with the AHCA Clinical Practices Committee to develop a set of Principles of Person-Centered Professional Care and urge Acumen consider these principles:[3]

1. The patient is seen and cared for as a whole person, not compartmentalized into body parts or functions.
2. Engagement of the interdisciplinary team is essential to the care and services for the patient according to their individual needs.
3. Person centered care is not task focused, rather it is focused on the person and their needs which is unique for each individual and cannot be accurately reflected in a categorical manner.
4. Quality outcomes are the result of a comprehensive, holistic and individualized dynamic relationship between the direct caregivers, interdisciplinary team, support staff, patient and family.
5. Flexibility in provision of care and services is critical to desired outcomes and requires consideration of both quality of life and quality of care aspects.

I also believe today's interdisciplinary team (IDT) configuration combined with the proposed RoPs require significant operational changes which should be considered in the delivery of, and associated payments for, SNF services including therapies and professional care, both rehabilitative and skilled maintenance. Ignoring this key RoP component, as well as other new SNF requirements, could have significant impacts on access and result in unintended provider behavior. For example, if providers are unable to cover the costs of person-centered services because of payment system challenges, they could be decertified from participation in the Medicare and Medicaid programs under the new RoPs.

Second, CMS and MedPAC have implemented and released demonstrations and reports, respectively, aimed at reducing fragmentation of services and shifting risk to providers. I believe support for such efforts will reduce costs and improve quality via provider collaboration (e.g., care transitions, shared risk, etc.). For example, on August 1, CMS released a proposed rule which adds three new episodes to the Comprehensive Joint Care demonstration (CJR).[4] Furthermore, in its June 2016 foundational IMPACT Act payment reform report, MedPAC discusses issues with fragmentation and the importance of moving towards an episodic payment approach. [5]

Rather than supporting the out-year goal of a PAC episode, which AHCA also has researched, the Acumen proposal further fragments the SNF payment system creating a more complex and

[3] See Nursing Component discussion for more detail.
[4] To view the CMS announcement, click here.
[5] MedPAC June 2016 Report, Chapter 3, Mandated Report: Developing a Unified Payment System for Post-Acute Care. Click here.

ambiguous payment environment. Such an environment would make coordination of services more difficult for providers and could negatively impact patient and beneficiary experiences and access to services. For example, by breaking therapy into two components, I believe there is a significant risk of a reduction in patient access to occupational therapy (OT) as well as to speech-language pathology (SLP) services. The entire payment system appears to be more of an a-la-carte approach to payment rather than a comprehensive payment which supports person-centered services and advances the goal of purchasing for value rather than volume with a focus on outcomes. In sum, the Acumen approach appears to be the antithesis of CMS' payment policy goals and appears to ignore the Medicare program's policy for beneficiary access to a comprehensive, clinically appropriate rehabilitation benefit.

RECOMMENDATION: *Acumen should conduct a thorough assessment of the entire proposal following a detailed review of CMS and MedPAC efforts and proposals. I strongly believe such due diligence is necessary for Acumen to appropriately support CMS in this endeavor.*

2. ***Misinterpretation of "Existing Statutory Authority" and Exclusion of Critical Policies and Related CMS Efforts:*** I have reviewed the pertinent provisions of Title XVIII of the Social Security Act (the Act), and disagree with Acumen's assessment that its proposal is within CMS's existing statutory authority. As you know, part of Acumen's proposal is the "use of front-loaded daily pricing to adjust payment rates over stays." However, the current statutory authority does not specifically authorize front-loading of SNF PPS per diem payments, nor does it contemplate such front-loading. Further, Acumen's interpretation of the proposal as being within the current SNF PPS statutory framework seems contradictory to CMS's statements explicitly rejecting the authority to include outliers in the SNF PPS—including as recently as the August 5, 2016 final FY 2017 SNF PPS payment rule[6] --notwithstanding repeated recommendations by stakeholders to do so in response to various proposed SNF PPS rules. Furthermore, I remain confused about the omission of critical policies and related CMS efforts. During the TEP, Acumen repeatedly noted that critical laws amending Section 1888 of the Act are outside of their scope of work. Two critical laws are the Improving Medicare Post-Acute Care Transformation Act of 2014 (IMPACT Act) and the Protecting Access to Medicare Act of 2014 (PAMA). These laws clearly make alterations to Section 1888 of the Act and should be included in Acumen's due diligence and research. Based upon my review of the law, I believe that Acumen's omission of these laws flies in the face of clear Congressional intent to move the SNF payment system toward rewarding higher-quality care and also ignores impactful changes to the SNF PPS statutory framework. As a contractor, I believe it is Acumen's responsibility to convey to CMS the need to revisit the parameters of "existing statutory authority."

   In terms of existing CMS research and work, the Acumen staff indicated they had not examined research from the PAC-PRD work or condition category development performed by the Centers for Medicare and Medicaid Innovation (CMMI or Innovation Center) for the Bundled Payments for Care

[6] In the preamble to the August 5, 2016 SNF PPS final rule, in response to comments about efforts to redesign the SNF payment system, CMS states, "However, we would note that, in order to develop a revised payment model that is implementable without requiring additional statutory authority, we have decided to only pursue those options which would be authorized within existing statutory constraints. Among other things, we believe this *precludes the possibility of an outlier policy or non-per diem payment* (***emphasis added*****).** 81 Fed. Reg. 51,970, 52,048 (Aug. 5, 2016).

Improvement (BPCI) and the Comprehensive Care for Joint Replacement (CJR) demonstrations. And, I doubt Acumen has examined the work associated with the CJR demonstration expansion noted, above.

The PAC-PRD work includes an array of information on assessment methods which could inform Acumen's work on developing resident characteristics as well as related resident groupings while using a more person-centered approach as discussed above. The CARE Tool, alone, could be an important resource in the development of a new SNF PPS and could aid in preparing SNFs for IMPACT Act-mandated payment reform. Likewise, CMMI has conducted extensive research on alternative payment methods, including those which still rely upon per diem payments. The Innovation Center has developed an array of approaches to shifting risk to providers allowing them to either benefit from improvements in care, a la gainsharing, or receive penalties should they not achieve quality metrics. I am deeply concerned about the omission of PAC-PRD research and CMMI experience. I believe the omission of such work from Acumen's research will result in a product for the Chronic Conditions Policy Group that ignores patient-centered care and is significantly out of step with CMS policy priorities.

RECOMMENDATION (s): *Acumen should: a) revisit "existing statutory authority" with CMS' Office of the General Counsel; and b) discuss with CMS contract managers the need to include important past and current CMS research as part of a* revised Acumen scope of work*. The results of such discussions should be released, along with the Acumen scope of work, to the TEP.*

3. ***Use of Flawed Data and Uncertain Statistical Methods:*** With respect, my overarching observation in regard to Acumen's methodological approach is that statistical measures will produce results regardless of the quality of the input data. Poor quality data with unmeasured error rates will provide invalid results that are difficult to evaluate. Thus, what appears to be statistically strong may be completely inaccurate. Specifically, Acumen proposes use of three highly problematic data sources. First, unlike hospital cost-to-charge ratio (CCR) data, SNF CCR data is lacking. Hospital cost reports, which produce hospital CCR data, are used for rate setting, are audited, and CMS updates CCR data annually. The Acumen proposed use of CCR data is not comparable to use in hospitals, is not proposed to be updated and audited annually. Since the data have never been used for any particular purpose, they are not sufficiently uniform for such use. Also, SNF charge data for the purposes Acumen proposes is also open to manipulation in the future. As an AHCA Committee Chair, I have access to the Association's research. AHCA commissioned an in depth SNF CCR reliability study by The Moran Company. Their findings support my assertions and I have included their work as ***Attachment A***.

   Second, as I understood the June 15 discussion, Acumen has not conducted an in depth analysis of the STRIVE II study. In fact, Acumen asked TEP participants for insights into the problems with STRIVE II for purposes of the proposed nursing component. I have three significant concerns with the use of STRIVE: a) The Lewin Group conducted an in depth analysis and found significant challenges with STRIVE; I have included the study as ***Attachment B;*** b) one CMS TEP has excluded STRIVE from their work due to problems with the study, the Five-Star Staffing TEP; and c) CMMI has established a few programs to provide supplemental nursing staff in SNFs to support

quality outcomes and to reduce rehospitalizations. The Innovation Center staff have been very open in admitting that these services cannot really be provided with existing SNF staff. At the same time, some SNFs have made the decision to adjust staffing levels even when not covered under a grant or demonstration. The use of advanced practice nurses and, in some cases, increased physician availability are relatively new initiatives. These programs were not in place when the STRIVE data were collected. By using the STRIVE data to estimate nursing needs, Acumen is attempting to create/update a payment system using staffing data that are, if not obsolete, recognized as being inadequate to support CMS objectives (i.e., high quality care and reduced rehospitalizations). Utilization of such questionable data sources for nursing care, the backbone of skilled nursing care, could have significantly negative implications for patients, providers and the Medicare program. Any changes to the nursing component must be carefully studied and tested before nationwide changed are made.

Finally, AHCA and CMS, itself, have found challenges with the use of MS-DRGs in terms of predicting downstream care needs. In the recent CJR expansion, CMS discusses at length such challenges and requests comment on how to address these issues.

RECOMMENDATION (s): *Acumen should revisit these data sources for the following reasons: a) SNF CCR data is fundamentally different from hospital CCR data. In light of these findings, it cannot be considered as a reliable source of data; b) MS-DRGs are not a reliable predictor of SNF care as envisioned by Acumen; and c) STRIVE has been discredited and discarded by another CMS TEP as well as by CMS' own demonstrations.*

4. ***Further Fragments SNF PPS:*** Related to my first point, CMS has long had an overarching goal to reduce fragmentation in payment and health care delivery. The Acumen proposal would add components and an array of complexity to the SNF PPS. I understand much more work is needed to refine the June 15 concept. However, I would like to point out that it is unclear how providers would track and adjust changes in resident groupings across components (or if such changes would be permissible). I also am unclear on how such changes and related costs would be monitored and managed by CMS. Below I offer my thoughts on the payment approaches but, for now, I simply point out that if the approach as presented were implemented, CMS and providers might have literally thousands of payment iterations to manage when one considers the variety of resident groupings across the components. Such an arrangement would make management of costs and coordination among providers, both upstream and downstream, more complex and difficult. I find this extremely troubling as a supporter of improved care coordination and because of CMS' own statements on such efforts. Former Deputy Administrator for the Center for Medicare, Jonathan Blum stated the following on the record, "[O]ne of CMS' top priorities [is] to lead the transformation of the delivery of care, so that all our beneficiaries receive high-quality care that is coordinated among their doctors and specialists, and which also avoids errors and saves money. In order to achieve this goal, CMS has already established initiatives that encourage health care providers to deliver high-quality, coordinated care at lower costs. CMS is transforming from a passive payer of services into an active purchaser of high-quality, affordable care through these

newly established initiatives."[7] Such comments have been repeatedly echoed by Sean Cavanaugh, Patrick Conway and Secretary Sylvia Burwell.

RECOMMENDATION: *As part of Acumen's responsibility to conduct due diligence research, regardless of its scope of work, Acumen should open a discussion with CMS on how this broad array of critical policy and programmatic efforts should be included in the research.*

5. ***Patient Characteristics Have Changed – Acumen Should Revisit This Analysis.*** As I noted, above, I have access to AHCA resources and research. Below, I offer some preliminary research on patient characteristics using alternative data sources and methodologies. While not decisive, these findings raise significant questions about Acumen's assertions in the February 2016 Patient Characteristics paper which indicates there have been no significant changes in patient characteristics. Specifically, one course of analysis found significant increases in dementia which is in stark contrast to the Acumen patient characteristics paper. Additionally, a second analysis using a different data source found decreasing functional capacity. Finally, additional analysis shows DRG intensity in hospitals during the 30 days before SNF admission have significantly increased in recent years. Developing payment policy should focus upon the features of conditions and comorbidities which impact care delivery, not the presence or absence of conditions or comorbidities. I believe these findings raise serious questions about Acumen's conclusions regarding resident characteristics and related resident groupings by component. In addition to AHCA research, CMS states in the proposed rule on Requirements of Participation (RoP) that the population of nursing homes has become more diverse and more clinically complex.

   RECOMMENDATION: *Based upon these findings, and CMS' own research cited for purposes of the proposed RoPs, Acumen should re-examine assumptions about patient characteristics through the lens of impact on care delivery.*

6. ***Payment Approach Replicates Problematic Features of Past Approaches:*** First, as I note above, I question whether the June 15 payment approach is permissible under CMS' "standardized per diem rate" authority found at Section 1888(e)(4)(C) of the Act (42 U.S.C. Section 1395yy(e)(4)(C)). Second, I believe Acumen should carefully consider payment approaches which are analogous to the June 15 concept and have proven problematic in practice. For example, the home health prospective payment system has proven highly problematic. Here, too, an episode of care is defined and per diem rates calculated based upon the underlying episode. And, the existing home health payment system has been fraught with issues since its inception. Both MedPAC and CMS have struggled to make adjustments to home health in order to address stinting and other challenges.

[7] Testimony delivered on November 10, 2011 before the Senate Committee on Homeland Health, Education, Labor and Pensions.

RECOMMENDATION: *Acumen should carefully research: a) whether CMS has the authority for a system which includes frontloading; and b) issues with home health which mirror aspects of the Acumen proposal.*

In addition to the points above, I am concerned about language such as "readily implementable." The Acumen proposal is a significant departure from the existing payment methodology. Resource Utilization Groups (RUGs) would be replaced by resident groupings defined by a mix of resident characteristics which vary by component. The proposal groups are defined by an array of assumptions around resident characteristics. In sum, this is a not an update to the SNF PPS, it is a new SNF PPS. The original SNF PPS was based upon several demonstrations, years of testing, and ongoing, transparent dialogue between CMS and the SNF profession. I would envision an equally rigorous process for testing and extended period of CMS and SNF profession discussions before such a change was implemented.

At a minimum, to address the concerns, above, Acumen and CMS should convene a series of webinars and/or teleconferences before any further work is conducted by Acumen. These calls or webinars would be among the TEP participants, Acumen and CMS to discuss submitted comments as well as alternatives to the proposal. Further, it would serve to consolidate comments and findings from the additional TEPs convened for this project and review the similarities in TEP participant concerns in a manner I outline below. Reconvening in the fall to assess work Acumen conducted in a vacuum would prove highly problematic. To aid Acumen, I would envision the following call or webinar series:

- ***Call 1: Alignment with existing law and CMS policy objectives.*** I do not believe simply stating that examination of policies which directly impact CMS payment and operating revenue is out of scope is sufficient.

- ***Call 2: Therapy Component***. This appears to be the most mature of the components and merits an in depth discussion of Acumen's work as well as that of other organizations.

- ***Call 3: Non-Therapy Ancillaries Services (NTAS).*** In federal fiscal year (FY) 2012, CMS promulgated a fairly detailed approach to a stand-alone NTAS component. I would like to understand why this work was completely disregarded when, in collaboration with other members of AHCA, I was able to craft an idea which falls within the bounds of Acumen's work parameters (e.g., statutory authority, etc.). Additionally, much discussion is needed about how such a component would be funded. Pulling funds out of the nursing component using old analytics, specifically the long cited 43 percent, is of grave concern. Nursing and related professional care is the corner stone of skilled nursing care. An uninformed proposal based on old data could create serious access and quality challenges for beneficiaries and providers.

- ***Call 4: Nursing.*** Nursing care is the backbone of skilled nursing center care. Any changes to the nursing component must be carefully studies before alterations are implemented. That said, I recognize the challenges with identifying data sources for nursing. I propose using such a call to discuss data sources to develop resident groupings. STRIVE and cost-to-charge data are highly

problematic. As noted in my NTAS call suggestion, blindly pulling funds from nursing could result in serious quality and access issues.

- ***Call 5: Non-Case Mix.*** Non-case mix was listed as a component in the slides but was not discussed in the other materials or during the June 15 TEP. I would like to understand how Acumen would address non-case mix. Specifically, most skilled nursing centers average between 30-50 years old and many are attempting to modernize to keep pace with changes in services. These include care for more frail patients and offering more home-like setting such as in keeping with the CMS-endorsed Artifacts of Culture Change. A discussion is needed to understand Acumen's ideas on non-case mix and how to account for these important service delivery changes.

- ***Call 6: Payment Methods.*** As you will see, I have serious concerns about whether the authority for the proposed payment method exists. And, should the statutory authority exist, I believe substantial work is needed to ensure that such a payment system both offers the flexibility needed by patients while not overwhelming providers and payers with complexity.

- ***Call 7: Operational Implications:*** The proposal includes a number of significant operational changes for SNFs. The proposal is a not an update to the existing PPS, it is a new payment system based on outdated concepts. To address these challenges, the operational implications of this proposal should be discussed. For example, as Acumen has proposed, securing information from hospitals, including MS-DRG information, could be very difficult for purposes of assigning patients to resident groupings. Additionally, CMS and states have issued an array of new operating requirements including significant changes to mandated staffing patterns and staffing credentials. These issues, and many others, should be discussed in detail.

Finally, as I noted, a number of the TEP participants transmitted a letter directly to CMS highlighting our concerns and requesting a meeting with the CMS project leads and leadership. We hope to hold a meeting with CMS in the coming weeks. I strongly believe the series of conference calls on the issues included in my comments should be held among the TEP participants or at least with AHCA researchers and me before a fall TEP is convened. Finalizing the June 15 proposal for presentation at a fall TEP without interim discussions likely will result in the development of a proposal which is highly problematic for CMS, beneficiaries, and providers. I also will be submitting additional information and comments in the coming weeks and months irrespective of an Acumen call schedule.

Section 1. Acumen Assessment of CMS Authority and Responsibility Questionable

Acumen presented its work as intended "to ensure readily implementable alternatives" and, therefore, constrained by two key principles: 1) the concept is within CMS' existing statutory authority (e.g., per diem payments); and 2) Acumen relies upon currently available data. Finally, while not explicitly stated as a framing factor for the work, Acumen also indicated that patient characteristics have not changed significantly since 2006-2008 when the Staff Time and Resource Intensity Verification (STRIVE) project was completed. Below, I offer my comments on these project elements.

Recommendations

- **Consult with the CMS General Counsel to carefully reconsider the statutory authority for the proposed concept. I do not believe, nor do attorneys with three law firms, that CMS has the authority to implement a frontloaded payment system.**
- **Revisit the Acumen scope with CMS to include a carefully study other CMS areas of work which should be considered for any PPS redesign effort.**

1. *Standardized Per Diem Rate Statutory Authority Has Been Over-Stepped.*

While Acumen has argued that its preliminary proposal for an alternative payment system would be authorized by the existing skilled nursing facility prospective payment system (SNF PPS) statute, codified at 42 U.S.C. § 1395yy(e), I respectfully disagree. In particular, while not entirely clear, I do not believe that the statute provides authority to implement front-loaded daily pricing that would result in an adjustment of payment rates over the course of a Medicare beneficiary's SNF stay. The statutory language found at 42 U.S.C. § 1395yy(e) gives absolutely no indication that Congress contemplated front-loaded daily pricing. More importantly, the SNF PPS statutory language suggests a consistent per diem rate by using language such as, "the Secretary shall compute for skilled nursing facilities an unadjusted Federal per diem rate equal to *the average of the weighted average per diem rates* computed under clauses (i) and (ii) of subparagraph (D)," and "[t]he Secretary shall compute a weighted average per diem rate for all facilities by computing an *average of the standardized amounts computed under subparagraph (C), weighted for each facility by the number of days of extended care services furnished during the cost reporting period* referred to in subparagraph (A) . . . ." 42 U.S.C. § 1395yy(e)(4)(E)(i); 42 U.S.C. § 1395yy(e)(4)(D)(i) (emphasis added). Using the adjectives "average" and "standardized" in the statutory language indicates consistency in per diem rates over the course of a Medicare beneficiary's stay in a SNF, not the front-loading of per diem rates, leading to inconsistency in the per diem rates over the course of the stay. Finally, the section setting forth the "computation of standardized per diem rate", 42 U.S.C. § 1395yy(e)(4)(C), as well as the section setting forth the methodology for computing an unadjusted federal per diem rate, 42 U.S.C. § 1395yy(e)(4)(E)(2), do not contemplate the concept of "stays" or "episodes" of per diem rates that would allow front-loaded daily pricing in adjustments.

I also reviewed the legislative history to the legislation mandating the development and adoption of the SNF PPS, Section 4432 of the Balanced Budget Act of 1997, Public Law No, 105-33, and did not find any indication within such legislative history that Congress desired the agency implementing the SNF PPS to adopt a front-loaded payment methodology.

Further, CMS' predecessor, the Health Care Financing Administration (HCFA), and CMS repeatedly have denied that the SNF PPS statutory language includes flexibility allowing for outlier payments, which may shed light into the agency's views of front-loaded per diem payments. For example, in the July 30, 1999 final rule implementing the SNF PPS, HCFA stated:

> *Section 1888(e)(4) of the Act provides specific requirements related to the formula and cost data to be used in computing the Federal rates. The statute provides that "the amount of the payment for all costs . . . of covered skilled nursing facility services" during the transition period is "equal to" a prescribed blended payment, and after the transition period is "equal to" the applicable adjusted Federal per diem rate. The statute does not provide for additional payments over and above these prescribed amounts. While the Act includes specific statutory authority for the application of outlier policies in relation to the acute care hospital PPS (section 1886(d) through (f) of the Act), home health PPS (section 1895 of the Act), and inpatient rehabilitation PPS (section 1886(j) of the Act), it does not provide such explicit authority with regard to the SNF PPS. 64 Fed. Reg. 41,644, 41,647 (July 30, 1999).*

CMS repeated its lack of statutory authority for outlier payments in various preamble discussions to proposed and final SNF PPS rules. *See, e.g.,* 74 Fed. Reg. 40,288, 40,288 (Aug. 11, 2009); 76 Fed. Reg. 26,364, 26,364 (May 6, 2011). In fact, as noted, CMS reiterated this position just last week in the August 5, 2016 final fiscal year 2017 SNF PPS rule. In response to comments on the current status of efforts to revise the SNF PPS, CMS stated:

> *We appreciate the support for this project, and will consider the suggestions made by commenters. However, we would note that, in order to develop a revised payment model that is implementable without requiring additional statutory authority, we have decided to only pursue those options which would be authorized within existing statutory constraints. Among other things, we believe this precludes the possibility of an outlier policy or non-per diem payment (emphasis added). 81 Fed. Reg. 51,970, 52,048 (Aug. 5, 2016).*

I raise this because, to the extent that the agency does not believe it has the statutory authority to implement outlier payments, it may adopt a similar view with respect to front-loaded per diem payments which, as described by Acumen, essentially amount to an intensity add-on to occur at the beginning of a Medicare beneficiary's SNF stay.

2. *Consideration of IMPACT Act and PAMA.*

As noted above, Acumen has consistently indicated that it did not consider the IMPACT Act and PAMA in the development of its proposed, redesigned payment system for SNFs. I believe that Acumen's lack of consideration of the IMPACT Act and PAMA ignore clear Congressional intent to move SNF payment to reward quality. Moreover, as discussed above, ignoring these key laws also could result in inconsistency in Acumen's proposal as compared to the SNF PPS statutory framework. In particular, the IMPACT Act added 42 U.S.C. § 1395yy(e)(6) to the SNF PPS statutory provisions, requiring the Secretary to reduce the otherwise applicable SNF PPS payment should a SNF not report certain quality and resource use data in the form, manner and timing specified by the Secretary. Furthermore, 42 U.S.C. § 1395yy(e)(6)(A)(i),

enacted by the IMPACT Act, requires CMS to reduce the payment update for any SNF that does not satisfactorily submit the new required data by 2 percent beginning in Fiscal Year 2018.

Similarly, it seems imprudent not to consider another statutory provision that modified the SNF payment system, PAMA. CMS has indicated, in preamble discussion that, "[w]e believe the implementation of the SNF VBP Program [required by PAMA] is an important step toward transforming how care is paid for, moving increasingly toward rewarding better value, outcomes, and innovations instead of merely volume." 81 Fed. Reg. 24,230, 24,230 (Apr. 12, 2016). Clearly, both Congress and CMS view PAMA as integral to improving upon the current payment system, but in its SNF PPS redesign proposal, Acumen did not even consider PAMA. As you may know, 42 U.S.C. § 1395yy(h)(1)(A) requires CMS to establish a SNF value-based purchasing program (VBP) under which value-based incentive payments (or adjustments) will be made to SNFs. However, despite the fact that the SNF VBP, by statute, expressly interplays with the SNF PPS statutory language (see, e.g., 42 U.S.C. § 1395yy(h)(6)(A)), Acumen did not consider PAMA's implications or goals in the SNF PPS redesign.

In order to best coordinate the policy goals of Congress and CMS, as well address the express statutory implications of the IMPACT Act and PAMA, I urge Acumen to consider both new statutory provisions as it refines the proposal to redesign the SNF payment system.

3. A Review of Other CMS Research Indicates Acumen is Contradicting Other CMS Work.

In addition to legal concerns about the Acumen's proposal, I also am confused by contradictory comments made by Acumen, as a CMS contractor, and the agency's own comments. For example, Acumen has presented evidence and repeatedly said there are no notable patient characteristic changes. However, in in CMS' proposed regulation, Medicare and Medicaid Programs; Reform of Requirements for Long-Term Care Facilities, Proposed Rule,[8] CMS indicates that changes in patient characteristics are a key driver for the Requirements of Participation (RoP) update. Specifically, the agency states in Section A, the executive summary, "Since the current requirements were developed, significant innovations in resident care and quality assessment practices have emerged. In addition, the population of nursing homes has changed, and has become more diverse and more clinically complex." CMS goes on to state in Section D, "In addition to the increase in the number of individuals accessing SNF care, the health concerns of individuals residing in LTC facilities have become more clinically complex." CMS also notes that the proliferation of assisted living and other alternatives to nursing home care, such as home care, have resulted in higher acuity in the nursing home resident population.[9]"

Particularly confusing is Acumen's research showing a decline in dementia. In the proposed RoP regulation, CMS goes to great length citing research which contradicts the Acumen Patient Characteristics paper:

> "Nursing homes are also caring for a significant number of residents who require behavioral health services. In 2004, over 16 percent of nursing home residents received a primary diagnosis of a

[8] Federal Register, Vol. 80, No. 136, Thursday, July 16, 2015

[9] Harris-Kojetin, L., Sengupta, M., ParkLee, E., and Valverde, R. Long-term care services in the United States: 2013 overview. National health care statistics reports; no 1. Hyattsville, MD: National Center for Health Statistics, 2013

> mental disorder upon admission (Jones, Figure 7). By the time residents were interviewed for the National Nursing Home Survey that percentage increased to almost 22 percent. The 1999 estimate was about 18 percent. In addition, nursing homes are caring for a significant number of patients with dementia and depression. By 2012, over 48 percent of nursing home residents had a diagnosis of Alzheimer's disease or another dementia and/or depression (Harris-Kojetin, p. 35, Figure 23). Similarly, in looking at the prevalence of four mental health conditions (depression, anxiety disorders, bipolar disorder, and schizophrenia) in nursing home residents 65 and older, the Institute of Medicine (IOM) found almost 50 percent had depression and almost 57 percent had one or more of those conditions (IOM (Institute of Medicine) 2012. The mental health and substance use workforce for older adults: In whose hands? Washington, DC: The National Academies Press). In addition, substance abuse disorders are also increasing in the nursing home population…To accommodate a more diverse population, the current care and service delivery practices of LTC facilities have changed to meet these changing service needs. These factors not only demonstrated a need to comprehensively review the regulations, but also informed our approach for revising the regulations." [10]

Finally, CMS states, "SNF and NF residents have become sicker and more complex over time and this must be factored into staffing decisions, both in terms of how many staff are present and the skill sets and competencies the staff need to have." [11] SNF payment policy must include consideration of staffing decisions to support a sicker and more complex population. Below, in the patient characteristics section, we discuss notable dementia findings which we believe merit a staffing implications discussion at a minimum.

[10] 80 Fed. Reg. 42,168, 42,174-75
[11] Id. at 42,201.

Section 2. Data Sources Highly Problematic & Uncertain Statistical Methods

With respect, my overarching observation in regard to Acumen's methodological approach is that statistical measures will produce results regardless of the quality of the input data. Poor quality data with unmeasured error rates will provide invalid results that are difficult to evaluate. Thus, what appears to be statistically strong may be completely inaccurate. Furthermore, Acumen's reliance on R squared statistics showing extremely low explanation of variance is confusing. Acumen seems to suggest that any explanatory power at all, no matter how small, is materially relevant to the task. I question this logic and, below, offer a critique of the data sources. Additionally, in methods as well as in the overarching proposal design, Acumen's work contradicts CMS' own policy and research (see MS-DRG section, below).

I also believe researchers have an obligation to fully disclose all methods and tests used in research for purposes of peer review and replication. Acumen has not made such full disclosure, and as a result, it is difficult to determine the extent of error, strength and weakness in its methods. However, the initial statement prefacing the reported results was that Acumen had a scope of work limited to existing data, and that Acumen was not asked to consider forces in the health care environment known to be changing the dynamics under which SNFs deliver care to Medicare fee-for-service (FFS) patients. This scope of work, in itself, is guaranteed to produce results that cannot stand up to close scrutiny or, more importantly, produce a payment system which will meet beneficiaries', providers' or CMS' needs as a payer.

Regardless of scope, researchers have an obligation to test the completeness, consistency, quality, and validity of their data sources. If Acumen performed such evaluation, it is not reported in the presentation or TEP materials. Thus, based upon available Acumen materials, I conclude the data sources are too seriously flawed to rely upon.

Finally, any payment methodology whose original purpose is to target payment to patient characteristics, cannot demonstrate that it improves payment accuracy when the differentiation in payment rates explains a negligible variation in cost, even if the cost measures were valid, which they are not. The statistical methods used by Acumen rely on assumptions that cannot be shown to be true. As an exercise in creating statistical predictive models, the Acumen research may be interesting, but it does not rise to the level of science upon which CMS should base its payment reforms. I offer the following points to support my assertion:

- *Acumen must test its science-based concepts in the real world.* Experiments that fail these tests, however elegant, and however much they demonstrate what can be done with existing flawed data and methods, still fail. The Acumen model has not been tested in the real world, and its failure can be anticipated were it to be advanced as a payment model in regulation.
- *The Acumen model assumes a static environment.* It does so out of necessity because of its scope of work, and because to use the statistical tools the research team proposes, it is a convenient assumption to make. The health care environment is anything but static. Policy leaders are actively intervening to drive SNFs and other providers to change their practices, and have been doing so for some time. Key features of the health care delivery system which are changing include referral practices, market dynamics, competition, medical and nursing practice, new technology, advanced technologies in hospitals shifting the flow of patients from hospitals to SNFs, value based payment, all payer models, medical homes, electronic health records, and many other features often associated with value-based purchasing and risk-bearing arrangements. To assume that these changes will not affect the SNF industry and its economics is to ignore a major feature that will determine the viability of the model being developed and will have significant negative implications for Medicare beneficiaries.

- *The Acumen research further fails to take account of the direction of all other payment policy in the Medicare program.* Medicare payment policy in legacy payment systems, alternative payment models, and demonstrations is moving in the opposite direction of fee schedules and component payment. The rest of Medicare is moving towards payment for outcomes, payment for broader bundles of care and for clinical episodes of care, and increased risk sharing between providers and the Medicare program. A unified post-acute payment system is mandated for design over the next decade by law. The Acumen research would move SNFs in the opposite direction, proposing a proliferation of sub-categories of patients across sub-components of a modest sized payment system as the basis for payment, increasing the granularity and complexity of payment. This direction is not consistent with the objectives of Medicare policy, and would divert SNF resources from the adaptations they need to make in order to prepare for unified post-acute care payment as well as better coordination with hospitals and physicians in future years.

Recommendations

- **Acumen should disclose in detail its assumptions and decisions used in statistical manipulations. Such disclosure should include detail on the CART analysis, STRIVE research and MS-DRG assignment methods.**
- **Discard STRIVE as a data source and, instead, work with TEP participants and CMS to explore alternative approaches to develop a revised nursing component.**
- **Develop an alternative approach to validating costs which does not rely solely upon CCR data. Again, I believe this should be done working with TEP participants.**
- **Use of MS-DRGs is problematic. However, Acumen should consider placing SNF resident groups on a platform similar to DRGs so that millions of cases could contribute to annual update of case weights.**

1. *Overview of Detailed Data and Methodological Critique*

Acumen proposes use of two highly problematic data sources. First, unlike hospital cost-to-charge ratio (CCR) data, SNF CCR data has never been used for rate setting and cannot be considered to be complete, reliable, or accurate. Hospital cost reports, which produce hospital CCR data, for the basis for rate-setting, are audited, and rates are updated annually with every new cost report. The Acumen proposal does not use CCRs in a manner comparable to the hospital model. SNFs have not standardized the reporting of charges, charge data are not audited, and one time use of these data can be demonstrated to be incomplete and of highly questionable reliability. Acumen does not propose revisiting the analyses for rates on an annual basis which would eventually identify issues with the data. As an AHCA Committee Chair, I have access to the Association's research. AHCA commissioned an in depth SNF CCR reliability study by The Moran Company. Their findings support my assertions. I have attached their reports as ***Attachment A***.

Second, as I understood the June 15 discussion, Acumen has not conducted an in depth analysis of the STRIVE II study. In fact, Acumen asked TEP participants for insights into the problems with STRIVE II for purposes of the proposed nursing component. I have three significant concerns with the use of STRIVE: a) the study is fundamentally flawed. Below, I offer a discussion of the flaws and I have included, as ***Attachment B***, a critique of STRIVE completed by The Lewin Group; b) at least one CMS TEP has

excluded STRIVE from their work due to problems with the study, the Five-Star TEP; c) the Center for Medicare and Medicaid Innovation has established a few programs to provide supplemental nursing staff that will work onsite in SNFs to support quality outcomes and to reduce rehospitalizations. The Innovation Center staff have been very open in admitting that these services cannot really be provided with existing SNF staff. At the same time, some SNFs have made the decision to adjust staffing levels even when not covered under a grant or demonstration. The use of advanced practice nurses and, in some cases, increased physician availability are relatively new initiatives. Indeed, these programs were not in place when the STRIVE data were collected. By using the STRIVE data to estimate nursing needs, Acumen is attempting to create/update a payment system using staffing data that are, if not obsolete, recognized as being inadequate to support CMS objectives (i.e., high quality care and reduced rehospitalization).

Finally, I offer a discussion of issues with MS-DRGs as predictors of post-acute care needs. Some of the evidence I present is based upon AHCA research. Other evidence is based upon CMS' own statements.

a. Acumen "Cost Per Day" Research for Therapy & Non-Therapy Ancillary Services (NTAS) Relies Entirely on Assumed Validity of its "Cost Per Day" Calculation

The Acumen research reported in its approach to designing the therapy and NTAS components relies entirely on the calculation of a "cost per day." This cost per day is what is "predicted" by all the statistical methodologies applied to generate condition groups and to estimate variations in cost. Acumen assumes the methodology will produce a valid cost per day without verifying that it is valid. Acumen's rationale for the method of producing a cost per day is that it is the only data available. If Acumen's methodology for calculating cost per day is not valid then the rest of the analysis is not valid or reliable, regardless of the statistical measures it produces. Validity of the cost per day calculation means that the "cost" estimation is an accurate representation of cost or relative cost (the concept used in the hospital payment systems where this methodology originates) in the real world. Acumen presents "cost" as though it were valid, but nowhere explains any testing of the data to ensure that it is capable of producing valid cost.

Sources Used for "Cost Per Day." Acumen calculates cost per day by applying a cost-to-charge ratio (CCR) to the charge on each SNF claim at the line level based on the revenue code on the line. CCRs are constructed from each facility's most recent cost report that overlaps the 2014 period from which the Medicare fee-for-service (FFS) claims were derived for the research. The claims include "charges" on each line with a revenue code for physical, occupational, or speech therapy, as well as general ancillary service revenue codes for pharmacy, supplies, equipment, radiology, etc.

To evaluate the validity of this method—the chance that it produces cost or cost relativities that exist in the real world—it is important to understand the sources of data and the quality of these data sources.

- **CCRs**: The CCR takes information from the cost report that represents all charges and costs in the therapy and ancillary service revenue centers. The charges and costs in the cost report represent all services delivered by the facility including long term care and SNF services covered by other payers.

  The origin in Medicare payment system methodology for use of CCRs is rooted in the inpatient and outpatient hospital prospective payment systems. In these payment systems, the objective is to allocate all hospital costs across ALL services delivered to FFS Medicare beneficiaries. The CCRs are never intended to represent actual costs at the level of individual services, but rather, relative weights across hundreds of service bundles (e.g., DRGs and ambulatory payment classifications (APCs)). This is reiterated throughout the regulatory history of these payment systems. Furthermore, these relative

weights are re-based every year to capture changes in medical practice, technology, mix of services and hospital cost experience. This methodology has been used from the inception of both prospective payment systems. It requires that hospital cost reports be regularly audited, and the annual weights and rates derived from the system are open to public comment annually. A variety of payment policy variations have been added to both systems to improve the stability and payment adequacy of the rates for service bundles, but nowhere in Medicare prospective payment regulation, does the CCR methodology promise to produce valid or accurate cost information at the level of a single service or single bundle of services.

CCR charges in cost reports are taken from aggregated accounting data for all claims for all payers and represent a mix of charges that may be different from the subset of charges for Medicare fee-for-service claims. This particularly will be true for therapy and NTAS. The patterns and intensity of therapy may be quite different for Part B compared to Part A and for patients covered by other payers, including Medicare Advantage. Similarly, the patterns of NTAS may be very different among sub-populations receiving services at the facility level. A very large number of SNFs have very low Medicare volume, for example, so for these facilities, the service mix represented by the charge data will be dominated by other payer, such as Medicaid. It is worth noting that a large percentage of nursing home residents are dually eligible for Medicare and Medicaid. By definition, the individuals are low-income and typically have more complex health care needs.

Additionally, all charge data are derived from a single charge master established by the facility administration, and used for all payers. The facility administration policies for establishing charges are highly variable. In a facility with significant self-pay patients, for example, the facility charges may be designed for billing patients and their families, particularly when few other payers use charges as the basis for payment. In facilities where no payers reimburse based on actual charges, the charge master may not be updated or viewed as relevant, and the data may be out of date or not tied to any consistent policy. Since charges have largely not been used for rate setting for Medicare Part A SNF, Medicare Advantage or Medicaid since the inception of the SNF PPS, these data have not been important to payment.

Because the charge master is a matter of the provider's policy, and not subject to Medicare regulation, except in not permitting different charge masters for Medicare and other payers, the charge master itself is not subject to audit. There is no standardized check on its uniformity, logic, consistency or meaningfulness.

- **CCR Cost:** The cost data in SNF cost reports has not been used in rate setting since the inception of the SNF PPS, except in the re-basing of the market basket, which is a largely automated analysis of cost reports performed by the CMS Office of the Actuary. While I am not aware of the exact audit practices applied to SNFs, but believe that SNF cost reports are not routinely audited at a significant level of detail. Even when cost reports are audited, they are spot checked, and the focus of the audit is generally on adequate accounting practices and documentation, not with a focus on whether costs are precisely allocated to cost centers accurately or in a standardized manner. Acumen has not specified its data cleaning practices, if any were used, or whether the CMS auditing practices of SNF cost reports were considered.

  The cost per day calculation by Acumen for therapy and NTAS is based on the charges reported on the Medicare FFS claim, multiplied by the total charges reported for the cost center in the cost report that matches the revenue center on the claim divided by the total costs reported for the cost center in the cost report that matches the revenue center on the claims. In this calculation, there are a vast range of possibilities for error, and based on our research team's experience with cost report analyses, a significant rate of error. Unless Acumen can describe a very thorough scrubbing of cost report data and the number

and type of facilities, as well as the associated claim volume that must be excluded from analysis due to erroneous or missing data, the estimated cost per day cannot be assessed for validity.

I also refer Acumen to The Moran Company memo (see ***Appendix A***) reporting the results of research on therapy and NTAS CCRs. In that research, therapy CCR data appeared to be highly variable but more closely resembling reasonable data than the NTAS data which was extremely variable and included considerable data which offer little hope of validity (e.g., CCRs > 1.0). A CCR > 1.0 means that the facility is charging less than the cost for a service. Both the variability and the difficult-to-interpret data argue for not using these data for any form of rate setting or statistical prediction exercises, unless it can be thoroughly evaluated and cleaned. Even once cleaned the remaining cost report data would need to be tested to ensure that it is representative of the industry as a whole.

Certainly, if the intent of the Acumen design effort is to recommend a rate setting process for therapy and ancillary services that is established after a period in which the industry is alerted to the necessity to improve and standardize its cost reporting. If such future cost reporting and claims data also would be used to re-set the estimated cost-per-day and used as the basis for all of Acumen's analysis, it is possible that, with appropriate data cleaning and validation protocols, a reasonably accurate cost per day could be derived. However, Acumen has stated that its scope of work is limited to existing data, regardless of data quality problems, and it has failed to document the extent to which it made any efforts to evaluate or correct quality problems.

Based upon the observations, above, I must conclude the following:

- The cost per day calculations for therapy and NTAS cannot be accepted as valid and because no effort has been made to measure error, these results cannot be adjusted to improve validity.
- If the cost per day calculations are not valid, then all statistical manipulation designed to predict in-valid cost cannot represent accurate or valid results.
- What is presented by Acumen as a research project based on existing data sources does not represent a payment system approach that can be practically implemented to produce any more accurate payment (the articulated purpose for the exercise). For the methodology presented based on predicting cost per day to produce improved targeting of payment based on patient condition, it would need to be re-based annually, as is done in the hospital payment systems. Acumen simply assumes, based on rudimentary comparisons of isolated variables, that patients, their needs, and clinical practices in SNFs have not changed over time and will not change in the future. Acumen further assumes that a statistical exercise based on one year of data could accurately produce payment values that could be accurate for an undetermined period of time. I will address these assumptions in other parts of our comments.
- The use of the cost per day methodology using CCRs was never intended to produce accurate cost data to be used to target payment for selected services. It was designed, and is currently used, to establish relativities among hundreds of service bundles within an overall payment system of huge scale. This methodology is neither well suited to SNF data, nor was it designed to be statistically manipulated to align relative costs to patient characteristics as is proposed by Acumen. All of the payment system reforms that build upon the CCR-based cost methods are moving toward broader packages of services, and alternative payment systems that involve value-based payment. However, Acumen uses these methods to move in the opposite direction, toward predicting cost for ever narrower payment categories based on patient characteristics that have no organic (natural) relationship to the cost data. Statistical methods are used to force this relationship. No statistical

performance measures can overcome the foundational problems of in-valid data, incorrect assumptions, and unmeasured error.

b. MS-DRG Use if Problematic – an Alternative Approach is Needed

Acumen used the 2014 Standard Analytic File (SAF) data for two purposes: 1) to utilize the MS-DRG data to develop clinical categories for proposed payment groups; and 2) to predict clinical conditions that represent NTAS costs per day. In each case, the data and the statistical methods Acumen used are fatally flawed. First, the MS-DRGs from the inpatient hospital or the rehabilitation impairment categories (RICS) from the inpatient rehabilitation facility (IRF) that immediately precede the SNF stay were classified into clinical categories. These clinical categories were further aggregated into categories representing different proposed payment groups. For each payment group an independent payment model was developed.

I have concerns about the use of MS-DRGs, in particular, as representing the clinical categories for SNF care. It is well documented that the MS-DRGs do not accurately predict the costs of post-acute care. In research commissioned by AHCA, researchers do use the hospital claim preceding SNF admission as the initial basis for designing clinical categories for payment. The difference in the AHCA research methods from Acumen's, however, derives from our understanding of the construction of a MS-DRG. An MS-DRG is based on a combination of procedure and diagnosis codes that best represent the care delivered in the hospital. AHCA researchers use a different MS-DRG analytic approach and pair it with these other data points to predict the level of care required in a SNF.

Specifically related to AHCA researchers' MS-DRG analytics approach, the ordering of coding in the claims determines the highest paid MS-DRG and other diagnosis codes determine whether the payment will qualify for the condition categories (CC) or major complication or comorbidity (MCC) for higher paid levels of MS-DRGs. The qualifying condition categories and/or major complications are not evident in the MS-DRGs used in the Acumen proposal. Thus, it is unclear whether, based on the Acumen approach, providers would know what condition or comorbidity was used in the hospital to determine the MS-DRG provided. When caring for the SNF patient, a progressive disease comorbidity or any other medical complication raises the bar for resource utilization. In studying the reasons for SNF care, AHCA researchers determined that the reason the patient is referred to the SNF is not usually directly related to the reasons for hospitalization, which have generally been resolved at the time of discharge. Rather, SNF referral is made because of complex co-morbid conditions which continue and require specialized care, but do not require hospitalization. The SNF continues to provide the care that was started in the hospital and should be completed in an inpatient setting which the SNF provides via skilled nursing care (e.g., IV therapy). The primary exception to such coding is that surgical MS-DRGs do differentiate some types of SNF care (e.g., lower extremity surgery, cardiac surgery).

Additionally, its proposed rule, "Advancing Care Coordination Through Episode Payment Models," CMS indicates that use of MS-DRGs do not lend themselves to a "number of medical conditions" for purposes of care planning over the course of an episode of care. Specifically, the agency states:

> *"Many non-procedural hospitalizations of Medicare beneficiaries are ultimately categorized based on the principle ICD-CM diagnosis code reported on a claim, which in turn is mapped to a Major Diagnostic Category (MDC) based on the involved organ system, which then leads to the assignment of any of various specific MS-DRGs based on the medical groups in the MDC. … This makes it challenging for providers to engage in care delivery redesign targeted to a specific patient population identified by MS-DRGs. Additionally, it is possible that beneficiaries hospitalized for certain medical conditions also may follow common clinical pathways before and after discharge*

for which similar care redesign strategies could be developed and used despite those beneficiaries' assignments to different MS–DRGs for their anchor hospitalizations. Thus, we believe that hospitalization for most medical conditions would require special consideration in the development of potential future episode payment models that goes beyond CMS's current approach of relying upon the MS–DRG for the anchor hospitalization to begin an episode and identify historical episodes for setting episode prices."[12]

While the discussion, above, is in the context of episode design, the point is the same – MS-DRGs are not good predictors across a period of care as patient conditions change and care needs change.

Even if the hospital principal or all diagnosis information were used, significant administrative barriers exits for SNFs to be able to obtain such information in a timely manner so that it matches the information ultimately submitted on a hospital claim. These barriers exist both in hospital data systems and SNFs. This would be a topic for Call 7 discussed in my cover letter. For example, SNFs have observed numerous problems with this approach in the voluntary BPCI demonstrations, such as delays in making the required information available to the SNF as well as inconsistencies in the information shared with the SNF and what eventually is submitted by hospitals on their claims. Similarly, recent research studies that investigated the impact of the communication of hospital discharge summaries/orders to post-acute providers, revealed a significantly high rate of omissions of relevant clinical information affecting patient care. I fear that these problems would be compounded nationwide if this proposed approach were to be implemented. Since hospitals are not held accountable for the accuracy and timeliness of the transfer of such information, I do not believe that SNFs should be held financially liable in the proposed payment model for such communication errors. Again, I do not recommend using hospital diagnosis data for the proposed SNF PPS payment model unless/until these significant administrative issues are clearly addressed.

AHCA researchers also used SAF data to classify CCs. Such CCs then were used to predict non-therapy ancillary services (NTAS) costs per day. In this case, comorbidities were identified, and those with the highest correlation to costs were used to create a weighted comorbidity score, with clinical categories such as "HIV/AIDs" weighted higher than clinical categories such as "diabetes." Based on research AHCA contractors performed both showing that the cost per day for NTAS are invalid and that NTAS cost cannot be predicted based on actual use of pharmacy data, I do not believe Acumen's approach to predicting NTAS costs using CCs is viable. I discuss this concern in detail in Section 3-B, NTAS Component.

Specifically, high NTAS cost cannot be predicted by co-morbidity classifications with the exception of conditions where the cost of treatment is well known, as is the case for HIV/AIDS. Coding for comorbid conditions does not, in most cases, include measures of severity. It is the severity of most chronic conditions, or the phase of treatment in relationship to clinical staging of illness, or a characteristic like multi-drug resistance, that triggers clinical decisions to prescribe high cost medications or the use of more invasive technologies and treatments. While some variables in the MDS are related to higher cost interventions, most high cost interventions are not represented. Also, assumptions that the need for IV therapy, for example, predicts a high cost NTAS is a fallacy. Some IV therapy products have very low costs and others have very high costs. High cost NTAS represent low frequency cases, and hence any effort to predict these situations without very strong predictive variables (which do not exist in any SNF-related data) will be highly inaccurate and erroneously target resources at unacceptable rates. I will discuss alternative and more accurate options for NTAS payment policy elsewhere in our comments.

[12] 81 Fed. Reg. 42,148, 42, 50811

To develop the payment categories for physical therapy (PT), OT, and SLP, the MDS data set was used. For PT / OT and SLP services, Acumen ran regressions of each MDS item on cost[13]. The MDS items were sorted by the largest to smallest R squares, where the R square statistic measures the percent of the variation in cost that is related to each MDS item. The MDS items with the largest R squares were used to categorize costs. In the case of PT and OT, MDS items were aggregated into two measures, a functional and cognitive score. In the case of SLP, three MDS items were used to categorize costs. While Acumen may have had some clinical basis for making these decisions, the statistics themselves do not appear to represent any form of clinical judgment, and other factors are not controlled for that might influence the categorization. Once again, neither medical complications nor comorbidities were factored in the proposal. This is an exercise that may result in categories that have little utility to differentiate cost in the real world of clinical practice because the progressive nature of disease or the medical complications which often present a clinical challenge and which must be accommodated during post-acute care.

c. CART Methodology is Unclear and May Not Reveal Sufficient Detail for Decision Making

The method Acumen used to develop the payment categories for therapy is called "classification and regression trees" (CART). This method is a data mining algorithm that classifies data according to which categories of selected variables produce the most groups with the most homogeneous values of the dependent variable, in this case cost.[14] The CART algorithm is iterative and entirely statistical in nature (e.g., no clinical inputs). The analysis first identifies the variable that produces the groups ("branches") which, in turn, produce the most homogeneous groups. For each branch, the algorithm then chooses the next variable that will produce homogeneous groups. The only basis for "homogeneity" is cost.

As with all data mining methods CART, can be subject to over fitting of data. Without some external controls, CART will continue subdividing, fitting as much variation as possible, even variation that represents noise in the data. Three methods are used to prevent this: 1) stopping rules; 2) using empirical methods to eliminate branches after the initial CART analysis is completed ("pruning"); and 3) randomly dividing the data into two data sets called "training" and "test" data sets.

Regarding the stopping rule, I agree that using a minimum of 5,000 stays because such a stopping rule ensures that each category will have sufficient sample size to estimate costs and to produce the statistics necessary to evaluate improvement. However, in the absence of further documentation of the methods used, I question whether an improvement in an R square of .0001 is sufficient to warrant a new branch particularly given the known problems with the quality of the cost data and the poor predictive power of the MDS items used by CART to predict costs. Acumen should document the methods used to create branches, prune branches, and the reasoning behind the stopping rule of .0001, which is a very low improvement in overall explanatory power.

Once a CART analysis has created a tree using the method described above, it then will reverse the process, attempting to eliminate branches, based upon predetermined pruning criteria. Branches that fail to meet the criteria imposed are eliminated. I request that Acumen document the method used prune the trees.

In a CART analysis, two data sets are randomly selected from the overall data, a "training" dataset and a "test" dataset. By cross validating the results obtained when CART is applied to each data set, any

[13] For regression to produce valid results the cost information needs to be valid. I conclude elsewhere in our discussion that the cost data are not valid.

[14] Again this method relies upon the validity of the cost calculations, which I conclude are not valid.

branches that resulted from random variation will be eliminated. I also ask that Acumen document the method used to randomly select these two data sets from the 2014 SAFs and to cross validate the results.

An additional overall concern is that Acumen assumes the utilization and costs of treatment will continue to be relatively stable year to year. I believe that it is important to further explore the assumption that utilization and cost structure will remain stable for several reasons:

- First, the results from CART for one year may differ from those of CART for another year if there is yearly variation in the cost structures,
- Second, changes in medical and nursing practice will not be accounted for in this approach, and
- Third, changes in market forces that shift referrals, change patterns of care, and otherwise shift services due to broader reforms in health care delivery will be missed.

This methodology relies entirely on a one-time statistical manipulation of a single year of data, without adequate testing for the stability of results in an environment that is known to rapidly be changing. Consequentially, the assumption that the SNF population, its needs, and nursing practice are static is not grounded in fact. The variability in SNF population and nursing practices will be addressed elsewhere in these comments.

The application of data mining techniques such as CART to the prediction of costs of treatment can be a sound methodology, providing the cost data are robust, and the methodology adequately tested, and repeated often enough to be sensitive to changes in cost and care patterns over time. CART is not as sensitive to data error as some other data mining methods. The amount of error found in the SNF cost reports used to produce cost data may produce unreliable results. As with any data mining exercise, quality assurance and validation of results are essential to produce valid and reliable results. I request the information needed to evaluate the extent to which Acumen performed the necessary tests and quality assurance was not provided in the TEP process.

d. STRIVE Data is Fundamentally Flawed and Should Not Be Used to Assess Nursing Care Needs.

STRIVE (Staff Time Resource Intensity Verification) project data was used to update payments for Medicare SNFs and to refine existing RUG system. From the start, STRIVE TEP participants and other parties pointed out issues with STRIVE sampling design and sample representativeness (analysis based on STRIVE 2007 and MDS 2007 data). The sampling technique to collect STRIVE data was dependent on voluntary participation and convenience sampling, which can lead to potential bias. Only fourteen states agreed to participate. Of the facilities sampled from those states, less than half of those invited facilities agreed to participate. The STRIVE sampling method followed an 11-step sampling protocol for a three-stage cluster sampling with stratification. At least four of the steps pose potential problems for representativeness and sampling bias:

- *Step 2*: Identified 15 states that agreed to participate – potential bias due to voluntary participation; most mountain, mid-west, and New England states, as well as CA, were not involved in the study; operating characteristics of facilities that participated could also have an impact;
- *Step 4*: Applied geographic restrictions for some states: FL, IL, LA, TX – due to travel restrictions on data monitors, only included facilities in close proximity to monitors;

- *Step 6*: Targets were based on number of facilities the data monitors were able to visit – convenience sampling drove sample size; and
- *Step 10*: Sampling was voluntary with high non-response rates and low agreement rates.

And, there are still other concerns with STRIVE. First with only 14 state participating, it is unclear whether participating states are representative and it is only unclear whether the sample is representative of Medicare and non-Medicare cases. Of equal concern when considering Acumen's proposed approach to creating resident groupings based upon STRIVE, sample sizes by RUG category are disparate, some categories do not have any samples, and many categories have less than 30 cases. The sample sizes are not consistent with precision in RUG weight estimation and the distribution of cases by RUG categories is different for STRIVE and non-STRIVE states. Furthermore, the proportion of cases is different between MDS and STRIVE data and leads to concerns about state level representativeness of STRIVE data. Further representativeness concerns arise from differences in patterns between STRIVE Medicare and MDS Medicare data. STRIVE data also does not have an assessment day variable so it is not possible to check whether STRIVE captures a sufficient sample size to represent assessment day distribution.

2. Requested Follow Up

AHCA has a sophisticated research department as well as relationships with contractors who have deep expertise in post-acute reimbursement and data analytics. I would like to schedule time for AHCA's researchers and key contractors to speak with Acumen researchers to better explain the discussion above and offer an in depth explanation of their approach. Please suggest a format and timing for such a discussion.

Section 3. Patient Characteristics

Developing payment policy should focus upon the features of conditions and comorbidities which impact care delivery, not the presence or absence of conditions or comorbidities. Acumen's approach to counting conditions and assuming care needs is problematic. And, AHCA researchers have identified a number of data sources which raise serious questions about Acumen's resident characteristics and related resident groupings by component. Based upon AHCA researchers' work, I disagree with Acumen's Patient Characteristics paper which states there have been virtually no changes in patients in the past ten years. One course of analysis found significant increases in dementia in stark contrast to the Acumen Patient Characteristics paper.

Furthermore, using a different data source, a second analysis found decreasing functional capacity. Finally, additional analyses showed that MS-DRG intensity in hospitals before 30 days before SNF admission have significantly increased in recent years. Therefore, patient mix based on MS-DRG groupings has changed in ways that will affect nursing and therapy. Also, HCC average risk scores for SNF admissions have increased. Each finding is discussed in more detail, below.

Recommendations

- **Research should focus upon patient conditions through the lens of the impact on care delivery, not prevalence or number of comorbidities.**
- **Replicate the research below which finds significant increases in dementia and decreases in function and develop a revised version of the Patient Characteristics document which discusses these data sources.**
- **Schedule time with AHCA researchers to discuss their findings and data sources.**
- **Convene a TEP participants meeting or call before the fall meeting to discuss in more depth patient characteristics and related analysis of trends in needed care delivery.**

1. *Standard Analytic Files (SAF) Data Shows a Significant Increased in Dementia.*

From the analysis, AHCA researchers found a huge increase in the number of SNF beneficiaries with diagnoses of dementia on their hospitalization claims.[15] Research found an increase from 12 percent in 2009 to 28 percent in 2014. I believe this provides the strongest evidence using an independent source of data that SNF beneficiaries increasingly have cognitive deficits. This finding raises questions about Acumen's assumptions that the patient population and nursing relativities have not changed. Plainly stated, the presence of dementia drastically affects the approach to care-giving, discharge planning options, therapy delivery and every other aspect of care.

2. *Medicare Current Beneficiary Survey (MCBS) Shows Notable Changes in Functional Status for Beneficiaries Receiving Care in SNFs.*

The MCBS data contain additional patient characteristics information that are not available in the Medicare Standard Analytic Files (SAFs). The MCBS is a continuous, multi-purpose survey of a representative sample of the Medicare population, including both aged and disabled enrollees, and is designed to yield

[15] The method included the following elements. Data was based on 100% SAF for SNF and Inpatient Hospital claims. Hospitalizations are identified for the time period 30 days prior to the SNF admission. Demographics are reported for 2007 and 2014. Hospitalization data is reported for 2009 and 2014, because the hospital DRG system was changed to the MS-DRG system in the 4th quarter of 2007, and SAF files have a calendar year construction.

about 16,000 beneficiaries in the dataset. Survey sampling weights are available to compute national estimates of beneficiary counts.

In this research, 2004 and 2012 MCBS Cost & Use files were used to compare functional characteristics of SNF populations identified in these two years of data. The Survey Health Status and Functioning file (RIC 2) includes data about the sampled beneficiaries' health and self-assessments of vision and hearing, functioning, among others. The RIC 2 file contains one record for each person who completed an interview in the community, whereas the RIC 2F file contains similar data from facility interviews. Nursing homes are included in the types of facilities currently participating in the survey and we used the Facility Identification file (RIC 7) to identify sampled persons residing in nursing homes many of whom are eligible for Medicare and Medicaid.

AHCA researchers identified two sub-groups of patients in 2004 and 2012:

- Sub-group #1 (Community cohort): Beneficiaries who had at least one SNF claim in the given year and completed an interview while residing in the community.
- Sub-group #2 (Facility cohort): Beneficiaries who completed an interview while residing in a nursing home.

AHCA research then compared each of these cohorts in 2004 and 2012 on the selected functioning variables shown in Tables 3-1 and 3-2, below. All beneficiary counts were weighted to produce national estimates. A chi-square test of independence was used to detect any significant differences in functional characteristics.

As shown in Table 3-1, researchers observed significant differences in the function variables for the community cohorts in 2004 and 2012. As defined above, this cohort consists of beneficiaries with at least one SNF stay during the given year. Beneficiaries in 2012 reported greater difficulties with activities of daily living (ADLs) and independent activities of daily living (IADLs) as compared to beneficiaries in the 2004 cohort. In addition, the percentage of beneficiaries reporting memory loss and falls within the last year was greater in 2012 compared to 2004. <u>All findings paint a picture of declining functional performance.</u>

As shown in Table 3-2, AHCA research found significant differences on the functioning variables for the nursing facility cohorts in 2004 and 2012. As defined above, this cohort consists of beneficiaries who were surveyed in the facility. Facility beneficiaries in 2012 reported greater difficulties with ADLs, IADLs and reported higher rates of bladder and bowel incontinence.

Based on the results of this analysis, AHCA research found that SNF and NF beneficiaries experienced greater deterioration in their functioning capabilities over time as reported by the beneficiaries themselves suggesting that this population is changing with respect to their disabilities and functional capacities.

Table 3-1: Comparison of Sub-group #1 (Community Cohort)

Sampled Person's Response	2004 National Estimate of Beneficiary Counts	2004 % of Total	2012 National Estimate of Beneficiary Counts	2012 % of Total	Results of Chi-Square Test of Independence
TOTAL	***1,066,482***	***100%***	***1,566,483***	***100%***	
Difficulty lifting/carrying 10 pounds					
Little to None	442,405	41%	608,049	39%	□2 =1922.78
Unable/Lot/Some	616,739	58%	946,048	60%	p-value <= 0.0001
Unknown	7,338	1%	12,386	1%	
Difficulty extending arms above shoulder					
Little to None	750,256	70%	1,032,798	66%	□2 =17774.83
Unable/Lot/Some	308,888	29%	533,685	34%	p-value <= 0.0001
Unknown	7,338	1%	-	-	
Difficulty writing/handling object					
Little to None	784,010	74%	1,055,567	67%	□2 =30858.28
Unable/Lot/Some	268,998	25%	509,692	33%	p-value <= 0.0001
Unknown	13,474	1%	1,224	0%	
Difficulty walking 1/4 mi. or 2-3 blocks					
Little to None	249,245	23%	390,999	25%	□2 =1652.01
Unable/Lot/Some	809,899	76%	1,168,868	75%	p-value <= 0.0001
Unknown	7,338	1%	6,616	0%	
Any difficulty using telephone (IADL)					
Yes	122,953	12%	262,980	17%	□2 =24568.64
No	871,493	82%	1,220,451	78%	p-value <= 0.0001
Doesn't do	64,698	6%	83,052	5%	
Unknown	7,338	1%	-	-	
Any difficulty doing light housework (IADL)					
Yes	235,626	22%	391,655	25%	□2 = 17432.06
No	594,244	56%	775,769	50%	p-value <= 0.0001
Doesn't do	229,274	21%	397,493	25%	
Unknown	7,338	1%	1,565	0%	
Any difficulty doing heavy housework (IADL)					
Yes	341,429	32%	636,935	41%	□2 = 31527.05
No	241,528	23%	262,124	17%	p-value <= 0.0001
Doesn't do	476,188	45%	665,858	43%	
Unknown	7,338	1%	1,565	0%	

Table 3-1 (contd.)

Sampled Person's Response	2004 National Estimate of Beneficiary Counts	2004 % of Total	2012 National Estimate of Beneficiary Counts	2012 % of Total	Results of Chi-Square Test of Independence
TOTAL	***1,066,482***	***100%***	***-***	***100%***	
Any difficulty preparing meals (IADL)					
Yes	190,297	18%	369,184	24%	☐2 =16069.96
No	636,767	60%	857,600	55%	p-value <= 0.0001
Doesn't do	232,080	22%	336,346	21%	
Unknown	7,338	1%	3,353	0%	
Any difficulty shopping 4 personal item (IADL)					
Yes	275,300	26%	494,006	32%	☐2 = 22950.73
No	546,500	51%	708,643	45%	p-value <= 0.0001
Doesn't do	237,344	22%	363,834	23%	
Unknown	7,338	1%	-	-	
Any difficulty with managing money (IADL)					
Yes	136,620	13%	224,400	14%	☐2 =24699.13
No	742,272	70%	992,991	63%	p-value <= 0.0001
Doesn't do	180,253	17%	349,092	22%	
Unknown	7,338	1%	-	-	
Any difficulty bathing/showering (ADL)					
Yes	359,505	34%	677,976	43%	☐2 =34402.19
No	675,733	63%	851,691	54%	p-value <= 0.0001
Doesn't do	23,906	2%	36,816	2%	
Unknown	7,338	1%	-	-	
Any difficulty dressing (ADL)					
Yes	264,487	25%	492,839	31%	☐2 =22125.82
No	773,100	72%	1,056,644	67%	p-value <= 0.0001
Doesn't do	21,557	2%	14,104	1%	
Unknown	7,338	1%	2,896	0%	
Any difficulty eating (ADL)					
Yes	94,249	9%	140,697	9%	☐2 =10880.10
No	959,247	90%	1,416,215	90%	p-value <= 0.0001
Doesn't do	5,648	1%	9,571	1%	
Unknown	7,338	1%	-	-	
Any difficulty get in/out of bed/chair (ADL)					
Yes	345,853	32%	658,906	42%	☐2 =43949.26
No	684,811	64%	893,472	57%	p-value <= 0.0001
Doesn't do	28,479	3%	14,104	1%	
Unknown	7,338	1%	-	-	
Any difficulty walking (ADL)					
Yes	586,883	55%	997,463	64%	☐2 =28949.56
No	417,073	39%	498,403	32%	p-value <= 0.0001
Doesn't do	55,189	5%	70,617	5%	
Unknown	7,338	1%	-	-	

Table 3-1 (contd.)

Sampled Person's Response	2004 National Estimate of Beneficiary Counts	2004 % of Total	2012 National Estimate of Beneficiary Counts	2012 % of Total	Results of Chi-Square Test of Independence
TOTAL	***1,066,482***	***100%***	**-**	***100%***	
Any difficulty using the toilet (ADL)					
Yes	221,148	21%	346,084	22%	☐2 =17324.58
No	823,371	77%	1,212,885	77%	p-value <= 0.0001
Doesn't do	14,626	1%	7,514	0%	
Unknown	7,338	1%	-	-	
Have fallen down in the past year					
Unknown	6,585	1%	5,338	0%	☐2 =10966.75
Yes	394,911	37%	681,441	44%	p-value <= 0.0001
No	658,608	62%	879,705	56%	
NA	6,378	1%	-	-	
Number of times fallen					
Fell once	253,768	24%	207,500	13%	☐2 =30811.45
Fell 2-5 times	264,520	25%	342,581	22%	p-value <= 0.0001
Fell more than 5 times	47,371	4%	92,719	6%	
Missing	484,539	45%	885,042	56%	
Unknown	16,285	2%	38,641	2%	
Memory loss interfere w/daily activity					
Yes	244,072	23%	472,851	30%	☐2 = 17078.12
No	811,764	76%	1,078,790	69%	p-value <= 0.0001
Unknown	10,646	1%	14,842	1%	
Were you depressed the last 12 months?					
All/most of the time	99,508	9%	127,770	8%	☐2 =3501.29
Some/little of the time	675,668	63%	1,021,982	65%	p-value <= 0.0001
None of the time	261,726	25%	389,461	25%	
Missing	2,143	0%	-	-	
Unknown	27,436	3%	27,269	2%	
Description of SPs general health					
Excellent/Very good	237,277	22%	407,808	26%	☐2 = 15320.59
Good/fair	638,256	60%	903,228	58%	p-value <= 0.0001
Poor	183,611	17%	255,446	16%	
Unknown	7,338	1%	-	-	

Table 3-2: Comparison of Sub-group #2 (Nursing Facility Cohort)

Sampled Person's Response	2004 National Estimate of Beneficiary Counts	2004 % of Total	2012 National Estimate of Beneficiary Counts	2012 % of Total	Results of Chi-Square Test of Independence
TOTAL	***1,482,279***	***100%***	***1,173,849***	***100%***	
Level of bladder control					
Continent	480,478	32%	259,328	22%	χ^2 =108962
Usually/occasionally incontinent	225,794	15%	367,157	31%	p-value <= 0.0001
Frequently incontinent/incontinent	766,171	52%	535,176	46%	
Missing	9,835	1%	9,522	1%	
Unknown	-	-	2,666	0%	
Level of bowel control					
Continent	646,413	44%	411,539	35%	χ^2 =53712.79
Usually/occasionally incontinent	215,386	15%	293,424	25%	p-value <= 0.0001
Frequently incontinent/incontinent	610,645	41%	456,697	39%	
Missing	9,835	1%	9,522	1%	
Unknown	-	-	2,666	0%	
Any difficulty with managing money?					
Yes	362,494	24%	415,200	35%	χ^2 =79565.43
No	211,966	14%	69,392	6%	p-value <= 0.0001
Doesn't do	890,514	60%	666,927	57%	
Missing	9,835	1%	3,246	0%	
Unknown	7,470	1%	19,086	2%	
Any difficulty shopping 4 personal item?					
Yes	383,430	26%	433,499	37%	χ^2 = 86610
No	228,064	15%	65,672	6%	p-value <= 0.0001
Doesn't do	858,270	58%	663,921	57%	
Missing	9,835	1%	3,246	0%	
Unknown	2,679	0%	7,510	1%	
Any difficulty using telephone?					
Yes	406,530	27%	419,588	36%	χ^2 =29074.99
No	498,420	34%	383,786	33%	p-value <= 0.0001
Doesn't do	557,540	38%	351,427	30%	
Missing	9,835	1%	3,246	0%	
Unknown	9,955	1%	15,802	1%	

Table 3-2 (contd.)

Sampled Person's Response	2004 National Estimate of Beneficiary Counts	2004 % of Total	2012 National Estimate of Beneficiary Counts	2012 % of Total	Results of Chi-Square Test of Independence
TOTAL	***1,482,279***	***100%***	***1,173,849***	***100%***	
Level of self perform: eating					
Independent	637,438	43%	344,977	29%	□2 = 57447.25
Supervision/limited assistance	491,550	33%	482,728	41%	p-value <= 0.0001
Extensive assist/total dependence	343,455	23%	338,904	29%	
Missing	9,835	1%	3,246	0%	
Unknown -	-		3,994	0%	
Level of self perform: locomot. On unit					
Independent	478,103	32%	203,075	17%	□2 =97779
Supervision/limited assistance	410,341	28%	319,580	27%	p-value <= 0.0001
Extensive assist/total dependence	544,948	37%	605,273	52%	
NA	39,051	3%	37,238	3%	
Missing	9,835	1%	3,246	0%	
Unknown -	-		5,438	0%	
Level of self perform: toilet use					
Independent	316,399	21%	103,033	9%	□2 = 119289
Supervision/limited assistance	355,335	24%	212,867	18%	p-value <= 0.0001
Extensive assist/total dependence	785,955	53%	844,263	72%	
NA	14,755	1%	7,191	1%	
Missing	9,835	1%	3,246	0%	
Unknown -	-		3,250	0%	
Level of self perform: transfer					
Independent	418,977	28%	133,675	11%	□2 = 189996
Supervision/limited assistance	384,531	26%	210,511	18%	p-value <= 0.0001
Extensive assist/total dependence	664,245	45%	807,195	69%	
NA	4,691	0%	13,738	1%	
Missing	9,835	1%	3,246	0%	
Unknown -	-		5,484	0%	

3. Research Should Focus on the Care Needed by Patients

Our researchers have addressed the external factors that shift the mix of patients in SNFs which is a different issue from the conditions for which they are referred to SNF. Work should focus upon the complexity of the patient's condition as it affects care giving. For example, in research on hospitalizations in the 30 days prior to SNF admission, between 2009 and 2014 our researchers found a six percent

increase in the average DRG weight for SNF patients over time. I believe this represents a real change in the intensity of hospitalizations prior to SNF admission. See Table 3, below.

Table 3-3. MS-DRG Intensity Between 2009-2014 Thirty Days Prior to SNF Admission

Year	Number of Hospital Stays	Sum of MS-DRG weights	Average MS-DRG wt per stay
2009	2,487,466	4,136,975	1.663
2014	2,402,943	4,218,601	1.756

The MCBS study, above, indicates that patients have less ability to perform ADLs and IADLs over time. This finding indicates more limited function in both the population with SNF admissions and the NF population at risk for SNF stays. Stated another way, the DRG data indicates a gradual increase in the severity of the conditions treated during hospitalizations and, therefore, downstream when referred to a Medicare-financed SNF care.

4. Clinical Grouping Changes Based on MS-DRGs & HCC Risk Scores for SNF Admissions

AHCA research shows two other types of changes in patient populations admitted to SNFs over recent years based on independent sources of data. Using the Medicare Standard Analytic Files for 100% of SNF admissions, Table 2-4 shows shifts in the MS-DRG categories of care from 2009- 2014. Increases in renal failure and infections have significant implications for changes in nursing practices, while change in orthopedic and spinal surgical patients have implications for more intensive short-term rehabilitation therapy.

AHCA researchers also applied the most recent Hierarchical Condition Category (HCC) risk score model to the claims for the year prior to SNF admissions in 2009 and 20014 Standard Analytic Files for a 5% sample of Medicare beneficiaries, to compare risk profiles. As you know, the HCC model is used to project risk for health care utilization and is used for rate setting for Medicare Advantage. It is Medicare's primary tool for using a patient's history of health care to predict future health care for chronic conditions. It is generally applied to a total population, and the SNF population would represent a narrow subset. From an examination of HCC, AHCA researchers found yet another indication that the SNF patient population gradually has changed over time. In 2009, SNF admissions had an average risk score of 2.18. Five years later in 2014, that average risk score increased to 2.30, an increase of 5.5 percent indicating greater care needs than in the past.

Table 3-4. Change in MS-DRG Based Clinical Groupings for SNF Admissions

Clinical Grouping	2009		2014		Ratio of change between 2014 and 2009
	Number of Inpatient Hospital Stays	% of total	Number of Inpatient Hospital Stays	% of total	
TOTAL	*2,487,467*	*100.0%*	*2,402,943*	*100.0%*	-
Orthopedic surgery on lower extremity	322,112	12.9%	327,077	13.6%	1.05
Respiratory	296,277	11.9%	252,732	10.5%	0.88
Cardiac surgery	64,616	2.6%	64,792	2.7%	1.04
Cardiac medical management	202,353	8.1%	179,991	7.5%	0.92
GI hospitalizations (surgical and medical)	166,224	6.7%	145,659	6.1%	0.91
Renal failure	61,850	2.5%	77,795	3.2%	1.30
Amputations	16,992	0.7%	18,007	0.7%	1.10
Spinal surgery	18,546	0.7%	26,205	1.1%	1.46
Other major musculoskeletal surgery	33,078	1.3%	30,111	1.3%	0.94
Other musculoskeletal medical management	137,233	5.5%	126,846	5.3%	0.96
Multiple significant trauma	5,911	0.2%	7,409	0.3%	1.30
Infections and parasitic diseases (includes sepsis)	249,979	10.0%	307,665	12.8%	1.27
Psychiatric	36,078	1.5%	33,258	1.4%	0.95
Stroke and related conditions	86,356	3.5%	81,855	3.4%	0.98
Other	789,862	31.8%	723,541	30.1%	0.95

As noted in the statistical methods section, above, I would like to schedule time for AHCA's researchers to speak with Acumen researchers to better explain their work on patient characteristics and why I believe patient needs have changed since 2006-2008.

Section 4. Component Comments

First, as discussed above, CMS has long had an overarching goal to reduce fragmentation in payment and health care delivery. The Acumen proposal would add components and an array of complexity to the SNF PPS. I understand much more work is needed to refine the June 15 concept. However, I would like to point out that it is unclear how providers would track and adjust changes in resident groupings across components (or if such changes would be permissible) and how such changes, as well as related costs, would be monitored and managed by CMS.

Below in Table 4-1, I have provided a summary of my component-specific recommendations. Following the table are detailed comments on each proposed component. Specifically, for each component, I provide an overview statement, a critique of Acumen's proposed component, and a discussion of my ideas for an approach to each component. For now, I simply would say that the proposal would make management of costs and coordination among providers, both upstream and downstream, more complex and difficult. I find this extremely troubling as a supporter of improved care coordination and because of CMS' own statements on such efforts.

Table 4-1. Brief Overview of Component Recommendations

Component	Recommendations in Brief
Therapy Components	• Evaluate 1) the differences in clinical characteristics between patients that have historically received one, two, or all three therapy disciplines per stay; 2) the differences in clinical characteristics of those patients that did or did not receive PT, OT, or especially SLP services, 3) the differences in clinical characteristics of patients that utilize the entire 100-day benefit period from short-stay patients, and 4) clinical characteristics of sub-populations (e.g. dementia) that demonstrate significantly different utilization patterns. • Hospital diagnosis data should not be used for the proposed SNF PPS payment model unless/until these significant administrative issues are clearly addressed and instead recommend that if Acumen reevaluate the predictive power of SNF claim diagnoses by applying logic that defaults to a subsequent SNF claim diagnosis if a generic V code was entered (per coding policy requirements) in the principal claim diagnosis position. • Utilize functional measures that are validated and that align with the IMPACT Act, and also recommend that Acumen seek insights from the CMS IMPACT Act contractors developing cross-setting PAC assessment data items and measures to coordinate efforts on developing a payment model approach that adequately addresses multiple domains using items that will be available in the foreseeable future. • Conduct a comparison of the predictive power of the proposed therapy payment model with the existing SNF PPS therapy component and share the results with the TEP for comment.
Non-Therapy Ancillaries	• Revisit the FY12 proposal and compare the proposal below. I also would like to understand why Acumen disregarded the FY12 proposal completely considering the amount of work completed on the approach

	and did not attempt to develop an alternative similar to the concept presented, below. • Related to the presumption about NTAS funding, I strongly believe Acumen should develop a line of study, using existing data, which would offer a more current estimate of the proportion of nursing component funds associated with NTAS costs. Simply pulled funds from the nursing component without a better understanding of the implications of such a change could have profound impacts on care for Medicare beneficiaries. • As with therapy, AHCA has conducted considerable research on NTAS costs (e.g., collection of Part A drug costs from LTC pharmacies). I urge Acumen to schedule time with AHCA and its researchers to review the work and explore an alternative to the June 15 concept.
Nursing	• Conduct a careful study of current trends in care among health care setting to better understand the types of patients SNFs receive and increasing expectations for the level of clinical care due to these trends. • Engage the TEP in a call or meeting on alternative data sources for assessing levels of needed nursing care. • Consider a set of nursing and related professional care principles (see below) when designing the nursing component. • Assure beneficiaries and providers adequate resources will be available for nursing and professional care delivery.
Non-Case Mix	• Acumen should factor modernization of health care delivery (both within SNFs and in health systems) into the impact analysis. • Health Information Technology (HIT) must be included in any non-case mix component redesign. • Acumen also should consider demand for services based upon demographic trends and projected demand for services. • Compliance with new CMS and state regulatory requirements also must be considered.

A. Physical Therapy/Occupational Therapy (PT/OT) and Speech-Language Pathology (SLP)

In brief, AHCA has conducted a great deal of research on therapy. My recommendations are summarized below and discussed in detail with accompanying data.

Recommendations

- **Evaluate 1) the differences in clinical characteristics between patients that have historically received one, two, or all three therapy disciplines per stay; 2) the differences in clinical characteristics of those patients that did or did not receive PT, OT, or especially SLP services, 3) the differences in clinical characteristics of patients that utilize the entire 100-day benefit period from short-stay patients, and 4) clinical characteristics of sub-populations (e.g. dementia) that demonstrate significantly different utilization patterns.**
- **Hospital diagnosis data should not be used for the proposed SNF PPS payment model unless/until these significant administrative issues are clearly addressed and instead recommend that if Acumen reevaluate the predictive power of SNF claim diagnoses by applying logic that defaults to a subsequent SNF claim diagnosis if a generic V code was entered (per coding policy requirements) in the principal claim diagnosis position.**
- **Utilize functional measures that are validated and that align with the IMPACT Act, and Acumen should seek insights from the CMS IMPACT Act contractors developing cross-setting PAC assessment data items and measures to coordinate efforts on developing a payment model approach that adequately addresses multiple domains using items that will be available in the foreseeable future.**
- **Conduct a comparison of the predictive power of the proposed therapy payment model with the existing SNF PPS therapy component and share the results with the TEP for comment.**

Based upon AHCA research, I strongly recommend that Acumen evaluate the differences in clinical characteristics between patients that have historically received one, two, or all three therapy disciplines per stay, as well as the differences in clinical characteristics of those patients that did or did not receive PT, OT, or especially SLP services. If Acumen continues to explore using hospital diagnosis information as a component of the proposed patient classification system, I recommend reevaluating the predictive power of all the hospital claim diagnoses and not just rely on the principal claim diagnosis that determined the hospital MS-DRG or IRF RIC payment classification. As I have noted in Section 2, Data and Methods, AHCA research indicates that MS-DRGs are not good predictors of post-acute care needs and I offer an alternative approach.

If Acumen proceeds with using diagnosis information as a component of the proposed patient classification system, Acumen should evaluate the predictive power of SNF claim diagnoses by applying logic that defaults to a subsequent SNF claim diagnosis if a generic V code was entered in the principal claim diagnosis position (per coding policy requirements). I strongly recommend that Acumen identify the factors that differentiate those patients that are likely to receive therapy services from those who do not so that providers that admit patients unlikely to receive therapy would not be overpaid while those admitting patients likely to receive therapy services are not underpaid.

Also, I strongly suggest the regression analysis data of the over 700 items tested that was reported at the February 2015 TEP and the regression analysis for all therapy variables investigated as part of the June 2015 TEP be shared with the TEP panelists for comment during a conference call before the next PPS redesign TEP planned for fall 2016. Building upon this work without interim input will create more significant problems, later.

Additionally, I recommend that Acumen conduct a comparison of the predictive power of the proposed therapy payment model with the existing SNF PPS therapy component and share the results with the TEP for comment. Acumen also should conduct additional quality checks on the data presented to the TEP and resend corrected data tables to the TEP for comment. I also recommend that Acumen seek insights from the CMS IMPACT Act contractors developing cross-setting PAC assessment data items and measures to coordinate efforts on developing a payment model approach that adequately addresses multiple domains using items that will be available in the foreseeable future.

Finally, Acumen should seek to collect and analyze MDS Section GG mobility and self-care data to assess the feasibility for the proposed payment model rather than the Section G item data that presents with the significant limitations cited by CMS in the FY 2016 SNF PPS Final Rule. I believe specific factors (listed at the end of this section of comments) need to be analyzed and considered as payment variables, or at the least, as part of an impact analysis to assure that certain patient or provider populations with different length-of-stay patterns are not impacted in a way that would result in access to care issues for patients with specific characteristics.

1. Acumen Proposed Approach

Acumen proposes to separate the single therapy per diem payment component into two separate therapy components: 1) a combined PT+OT therapy component, and 2) a separate SLP therapy component. Each of these two components would be independently determined by "resident characteristics" that are related to historical service delivery patterns. Therapy costs would be determined by therapy cost-to-charge (CCR) ratios associated with SNF claims, rather than the assigned RUG therapy component payments (see separate comments related to my concerns related to using CCR ratios).

For the PT+OT component classification system, Acumen proposes to create 23 resident groups based on 1) 5 clinical categories determined by hospital/IRF diagnosis, 2) an admitting MDS-derived functional measure developed by Acumen, and 3) a MDS-derived "cognitive" measure as defined by Acumen (slide 36).

For the SLP component classification system, Acumen proposes to create 10 resident groups based on 1) 2 clinical categories determined by hospital/IRF diagnosis, 2) a MDS-derived "cognitive" measure as defined by Acumen, 3) a MDS-derived indication of a swallowing disorder, and 4) a MDS-derived ability to eat indicator (slide 48).

To develop clinical categories for the PT+OT component and the separate SLP component, Acumen proposes to use the qualifying hospital DRG principal diagnosis (or IRF RICs) to independently determine five distinct PT+OT clinical categories, and two distinct SLP clinical categories. Acumen suggested to TEP participants that the SNF MDS would be revised so that the SNF would submit the necessary hospital/IRF diagnosis data at the time of the 5-day assessment.

During the June 15 TEP, Acumen presented limited data from cost-report and MDS data that demonstrates a relatively strong correlation between PT and OT costs per day and a relatively weak correlation in costs per day between PT or OT and PT+OT combined with SLP. Additionally, two examples were provided that demonstrated that PT and OT costs per day were inversely proportional to SLP costs when comparing scores of MDS items associated with making oneself understood, and self-performance of eating.

2. Concerns with Acumen Proposal

I agree that the delivery pattern of SLP services for SNF patients differs from those for PT and OT. However, I strongly believe that the proposal to carve up the therapy component into two separate therapy components (PT+OT and SLP) based on the evidence presented is seriously flawed and could result in numerous unintended consequences. Patient-centered SNF rehabilitation therapy services reflect the complexity of the functional need characteristics unique to each beneficiary.

a. Number of Therapy Discipline Differences is a Concern

In a recent AHCA research project, the results of which were shared with CMS[16], AHCA found that there were unique service delivery patterns during an episode of care (or stay) for patients that received PT, OT, and SLP services. There were even more remarkable differences when we observed various combinations of the three therapy disciplines. None of these differences appear to have been considered in the Acumen analysis or proposed payment model approach. I believe that addressing the patient characteristics that drive the observed differences in the number and combination of therapy disciplines needed for patient care is essential for any proposed payment model change.

For example, the AHCA research, which included an analysis of the utilization patterns of 427,317 SNF therapy episodes during 2011-2012 (see Table 4A-1 below), demonstrates that nearly all SNF patients receiving therapy services receive PT (96%) and OT (95%) services, while only 43% receive SLP services. It is unclear from the evidence presented to the TEP that Acumen has attempted to determine the patient characteristics that differentiate those that have traditionally received SLP services from those that have not.

Furthermore, the seven discipline combination rows in Table 4A-1, below, reveal dramatic differences in patient lengths-of-stay depending on the combination of therapy services. For example, the average length of stay of a single therapy discipline (PT only, OT only, SLP only), is around 20 days, while the length of stay for two combined therapies (PT+OT, OT+SLP, PT+SLP), accounting for 55% of SNF therapy patients, increases to around 29 days. Most notably, patient episodes that include all three therapy disciplines, accounting for 40% of SNF therapy patients, increase to 38 days. It does not appear from the evidence presented to the TEP that Acumen has considered the characteristics of patients that require a combination of therapy services in the proposed payment model approach.

[16] AHCA. Summary of the AHCA SNF PPS Therapy Component Study conducted by the Moran Company. October 30, 2014.

Table 4A-1. SNF Rehabilitation Episode Characteristics – CY 2011-2012 (AHCA/Moran)

	Number of episodes	% of total	Mean episode duration (in days) (SD)	Mean episode duration (in weeks) (SD)
Episodes included in analysis	*427,317*	*100%*	*31.7 (25.7)*	*4.53 (3.67)*
*3 disciplines**				
PT	410,814	*96%*	32.1 (25.8)	4.59 (3.69)
OT	405,169	*95%*	32.2 (25.7)	4.60 (3.67)
SLP	182,225	*43%*	37.1 (28.1)	5.30 (4.01)
*7 discipline combination**				
PT only	12,810	*3%*	20.7 (21.6)	2.96 (3.09)
OT only	7,350	*2%*	20.0 (20.0)	2.86 (2.86)
SLP only	5,514	*1%*	19.1 (17.0)	2.72 (2.43)
PT + OT	224,932	*53%*	28.3 (23.0)	4.04 (3.29)
OT + SLP	3,639	*1%*	30.0 (26.4)	4.29 (3.78)
PT + SLP	3,824	*1%*	29.8 (26.9)	4.26 (3.84)
PT + OT + SLP	169,248	*40%*	38.0 (28.2)	5.42 (4.03)

**defined as episodes with at least two days of therapy services within the discipline*
**for the 3 discipline combinations, categories are not mutually exclusive*
**for the 7 discipline combination categories are mutually exclusive*

Of note is that, with the exception of the RU RUG, the existing SNF PPS payment model does not require a combination of therapy disciplines to achieve a higher payment threshold. And, the RU RUG only requires a minimum of two disciplines. As such, the observed differences in service delivery patterns are likely driven more by yet-to-be investigated/identified patient characteristics than by payment model incentives.

I am also concerned that the Acumen approach to estimate a cost-per-stay for therapy services, and then carve up the per-stay costs into per-diem estimated costs across all patients further waters-down the impact of the delivery of therapy services, particularly SLP services. For example, the episode characteristics of therapy patients in the AHCA research of 427,317 episodes from 2011-2012, as reflected in Table 4A-2 below, demonstrates that the per-week intensity of SLP delivered to those patients whose clinical condition required SLP intervention is much closer to that delivered by PT or OT. This intensity of SLP service delivery for those patients that actually need and receive SLP services is not reflected in the proposed payment model approach, and could result in serious unintended consequences. I strongly recommend that Acumen evaluate the differences in clinical characteristics between patients that have historically received one, two, or all three therapy disciplines per stay, as well as the differences in clinical characteristics of those patients that did or did not receive PT, OT, or especially SLP services.

Table 4A-2. SNF Rehabilitation Episode Therapy Intensity Characteristics – CY 2011-2012 (AHCA/Moran)

	Number of episodes	% of total	Average Number of Disciplines per Week (SD)	Average Treatment Sessions per Week (SD)	Average Treatment Days per Week (SD)	Average Treatment Minutes per Week (SD)			
						TOTAL	PT	OT	SLP
OVERALL (Any discipline)	*427,317*	*100%*	*2.23 (0.53)*	*9.68 (2.78)*	*4.85 (0.84)*	*513.04 (165.65)*	*236.15 (91.82)*	*217.92 (87.88)*	*58.98 (78.57)*
7 Discipline Combinations									
PT only	*12,810*	*3%*		4.05 (0.96)	3.90 (1.06)	190.05 (80.82)	182.97 (82.81)	6.05*	1.03*
OT only	*7,350*	*2%*		3.97 (0.93)	3.81 (1.05)	172.95 (72.15)	6.17*	165.44 (74.37)	1.33*
SLP only	*5,514*	*1%*		4.03 (0.91)	3.95 (0.94)	149.16 (57.72)	1.89*	1.78*	145.5 (57.7)
PT + OT	*224,932*	*53%*	1.97 (0.16) †	8.73 (1.57)	4.87 (0.83)	513.76 (146.17)	267.22 (83.50)	246.05 (77.32)	0.48*
OT + SLP	*3,639*	*1%*	1.84 (0.43) †	6.88 (1.71)	4.41 (0.86)	283.37 (105.92)	3.69*	144.96 (73.36)	134.73 (64.89)
PT + SLP	*3,824*	*1%*	1.84 (0.47) †	6.77 (1.67)	4.40 (0.89)	286.46 (104.07)	154.48 (77.38)	4.67*	127.31 (64.78)
PT + OT + SLP	*169,248*	*40%*	2.75 (0.32) †	11.92 (2.12)	5.00 (0.72)	573.23 (128.14)	223.33 (65.49)	212.27 (62.5)	137.63 (60.53)

** In PT/OT/SLP only episodes, we observed small number of treatment minutes from other disciplines because of how we defined an episode. In our definition, it is possible for a PT only episode to have one day of OT service and one day of SLP service. Similarly, small number of treatment minutes of other disciplines appears in episodes that were not categorized as that discipline or discipline combination.*
† In PT + OT episodes, the average number of disciplines per week is less than 2, because in certain weeks of an episode, the patient may receive treatment for only one discipline. Because of the same reason, OT + SLP and PT + SLP episodes also had less than 2 disciplines per week, and PT + OT + SLP episodes had less than 3 per week.

I recognize that one of the goals of this alternate approach to paying for therapy services is to move away from incentives to that link payment to volume, and similarly to avoid creating non-clinical incentives to increase the number of therapy disciplines treating a patient. Thus, I am recommending a thorough analysis of the characteristics of patients that typically require multiple therapy disciplines so that the payment model adequately addresses the increased care needs of this population without incentivizing therapy volume. Adding this to the modeling would result in a more patient-centered approach to predicting a patients interrelated therapy needs rather than further compartmentalizing the three therapy disciplines into independently operating payment silos.

b. Acumen's proposed construction of the PT+OT Component and the Separate SLP Component

Acumen discussed, and provided summaries of, data analysis to support the use of the principal diagnosis from the hospital MD-DRG or IRF RIC to identify mutually exclusive resident clinical categories (see Table 4A-3 below) for the proposed PT+OT clinical categories, and SNF MDS data to identify the resident characteristics to be applied to each clinical category in order to the resident case-mix that determines the PT+OT or SLP per-diem payment. As explained in the previous comments, the AHCA data analysis indicates a significant difference in patient characteristics when three rehab disciplines address the patient.

This level of detail does not appear to have been identified or factored into the Acumen proposal. It is unsettling and inconsistent with patient-centered care to have a payment system with over 90% of the patients seen for SLP rehabilitation with diagnosis classifications as "other."

Table 4A-3. Proposed Clinical Categories for Separate PT+OT and SLP Therapy Components

Clinical Category	Description
Proposed PT+OT Clinical Categories	
Major Joint Replacement or Spinal Surgery	Received major joint replacement surgery or spinal surgery during prior inpatient stay
Other Orthopedic	Received orthopedic surgery (not major joint) or a non-surgical treatment for orthopedic condition during prior inpatient stay
Non-Orthopedic Surgery	Received non-orthopedic surgery during prior inpatient stay
Acute Neurologic	Received non-surgical treatment for acute neurologic condition (e.g. stroke) during prior inpatient stay
Medical Management	Received other non-surgical treatment during prior inpatient stay
Proposed SLP Clinical Categories	
Acute Neurologic	Received treatment for acute neurologic condition (e.g. stroke) in prior inpatient stay
Other	Did not receive treatment for acute neurologic condition in prior inpatient stay

c. Reliance on Hospital Principal Claim Diagnosis Concern

In prior comments and submitted documentation, I have reiterated concerns that a beneficiary's need for post-acute care, particularly SNF care, is not reflected very well by primary hospital diagnosis information. The principal diagnosis on the hospital claim has as its function the assignment of the DRG which means it represents the primary condition treated in the hospital and it is selected by hospital coders to yield the highest paid DRG. As I have noted, the coded DRG is not the reason patients need SNF care or therapy after the primary reasons for hospitalization have been resolved at discharge. Regardless of the statistical testing, this variable cannot be assumed to be the reason for SNF care or therapy and should not be used as such or to predict therapy service costs or patterns. Recent AHCA analysis has indicated that it is possible to use the inpatient claim diagnoses collectively (from the 25 available fields) to characterize the patient in a way that may more completely describe the overall patient condition. For example, as reflected in Table 4A-4 and 4A-5 below, recent AHCA analysis has demonstrated that diagnosis subgroups within a clinical category, and furthermore, comorbidity sub-groups can be attributed to an anchor diagnosis to reduce the variance within case-mix groups.

e. Diagnosis Subgroups Within a Clinical Category Option

The AHCA research of SNF therapy episodes during 2011-2012 (discussed earlier), demonstrated that within a broad diagnosis-based clinical category, additional precision could be provided by differentiating logical subgroups within the category. For example, Table 4A-4 below indicates that major orthopedic SNF patients demonstrated substantial differences in therapy episode durations and costs. Such an approach would be clinically logical, easily understood, and could reduce variance within payment groups. I recommend that Acumen investigate whether such diagnostic subgrouping within each broad category would improve the predictive power of the model.

Table 4A-4. Example of Weighting Based SNF Payments for a Major Orthopedic Diagnosis-Based Classification with Diagnostic Subgroups CY 2011-2102 Therapy Episodes (AHCA/Moran)

	Part A Therapy RUGs			
Orthopedic Major Grouping	Most Frequent Episode Duration	% of Episodes Represented	Average Therapy Payment (SD)	Weight (for sub-categories within the orthopedic major category)
I. Orthopedic Group Sub-Categories		*34%*	*$4,013 ($2012)*	
I.A. Amputation	8-20 days	28.2%	$2,154 ($1067)	1.00
I.B. Ankle/ Foot	21-40 days	27.0%	$5,102 ($1792)	2.37
I.C. Knee/Lower Leg	8-20 days	39.9%	$2,580 ($1000)	1.20
I.D. Hip/Thigh/Pelvis	21-40 days	30.6%	$5,413 ($1671)	2.51
I.E. Multiple lower extremity (any combination of B-D)	21-40 days	27.6%	$5,342 ($1710)	2.48
I.F. Wrist/Hand	21-40 days	30.1%	$4,659 ($1975)	2.16
I.G. Elbow/Forearm	21-40 days	28.9%	$5,255 ($1779)	2.44
I.H. Shoulder/Upper Arm	21-40 days	28.7%	$5,220 ($1774)	2.42
I.I. Multiple upper extremity (any combination of F-H)	21-40 days	28.8%	$5,294 ($1882)	2.46
I.J. Lumbar/Thoracic/Sacral Spine	8-20 days	31.6%	$2,447 ($1044)	1.14
I.K. Cervical spine/Neck	8-20 days	28.1%	$2,509 ($1099)	1.16
I.L. Multiple spine/neck (any combination of J-K)	21-40 days	30.3%	$5,288 ($1616)	2.46
I.M. Multiple Sites (any multiple site codes, or combinations that cross E, I, L, or combinations of two or more different codes from either A-D, F-H or J-K)	21-40 days	28.2%	$5,118 ($1781)	2.38

f. Comorbidity Sub-Groups Within a Clinical Category and/or Diagnostic Sub-Group Option

The AHCA research also demonstrated that within a broad-based diagnosis-based clinical category, additional precision could be provided by identifying and adjusting for secondary diagnoses that could serve as co-morbidity indicators for the primary clinical group. For example, Table 4A-5 below indicates that major orthopedic SNF patients and orthopedic diagnosis sub-groups by body region demonstrated substantial differences in therapy episode durations and costs depending on the presence of secondary diagnoses such as dementia, infection, etc. as compared to patients without such secondary diagnoses. Such an approach would be clinically logical, easily understood, and could reduce variance within payment groups. I recommend that Acumen investigate whether the identification of such comorbidity diagnoses within each broad category and sub-groupings would improve the predictive power of the model.

Table 4A-5. Example of Weighting Based SNF Payments for a Major Orthopedic Diagnosis-Based Classification with Diagnostic and Comorbidity Subgroups CY 2011-2102 Therapy Episodes (AHCA/Moran)

	Number of Episodes Represented	Most Frequent Episode Duration	Average Episode Duration	Average Therapy Payment (SD)	Weight 5 *(within orthopedic sub-category)*
I. Orthopedic Group Sub-Category & Modifier Type	*36,761*			*$4,013 ($2,012)*	
I.C. Knee/Lower Leg	9,311	8-20 days	14.0	$2,580 ($1,000)	
debility	5,906		14.0	$2,592 ($996)	1.01
no modifier	3,405		14.1	$2,559 ($1,007)	1.00
I.D. Hip/Thigh/Pelvis	12,940	21-40 days	29.7	$5,413 ($1,1671)	
debility	8,184		29.7	$5,513 ($1,589)	1.05
dementia	1,389		29.8	$5,400 ($1,634)	1.03
no modifier	4,486		29.7	$5,241 ($1,781)	1.00
I.J. Lumbar/Thoracic/Sacral Spine	5,376	8-20 days	14.1	$2,447 ($1,044)	
debility	3,822		14.1	$2,487 ($1,034)	1.06
infection	425		14.3	$2,479 ($1,094)	1.06
no modifier	1,495		14.1	$2,343 ($1,056)	1.00

If Acumen continues to explore using hospital diagnosis information as a component of the proposed patient classification system, I recommend they reevaluate the predictive power of ALL the hospital claim diagnoses and not just rely on the principal claim diagnosis that determined the hospital MD-DRG or IRF RIC payment classification. This approach is more complicated than just taking the principal diagnosis, but could result in a patient classification that is more reflective of the need for SNF care.

It is unfortunate, yet not unexpected, that Acumen's analysis of SNF claim principal diagnosis and MDS diagnosis data was as nominally predictive of therapy costs as the prior hospital stay principal diagnosis. Neither the hospital nor SNF principal diagnosis used in isolation adequately described the therapy needs of SNF PPS patients. However, the principal limitation of the SNF claim principal diagnosis is that more than 40% of SNF PPS residents are assigned generic V codes (e.g. V57.89 – Rehabilitation Procedure) as the principal diagnosis. It is important to note that for years CMS and its claim processing contractors have provided explicit instructions to SNFs to bill this way. The following is an excerpt from the ICD-9-CM Official Guidelines for Coding and Reporting that CMS referenced for claims that were submitted during the period used for the Acumen analyses [17].

[17] http://www.cdc.gov/nchs/data/icd/icd9cm_guidelines_2011.pdf

Admissions/Encounters for Rehabilitation

When the purpose for the admission/encounter is rehabilitation, sequence the appropriate V code from category V57, Care involving use of rehabilitation procedures, as the principal/first-listed diagnosis. The code for the condition for which the service is being performed should be reported as an additional diagnosis.

Only one code from category V57 is required. Code V57.89, Other specified rehabilitation procedures, should be assigned if more than one type of rehabilitation is performed during a single encounter.

However, these instructions also indicate that the SNF should bill the principal reasons for therapy services in the subsequent diagnosis positions**.** I recommend that if Acumen proceeds with using diagnosis information as a component of the proposed patient classification system, that they reevaluate the predictive power of SNF claim diagnoses by applying logic that defaults to a subsequent SNF claim diagnosis if a generic V code was entered (per coding policy requirements) in the principal claim diagnosis position**.**

g. Excessive Variance Concerns

With regard to the five PT+OT clinical categories and two SLP clinical categories identified by Acumen by prior inpatient stay, I note very large variances in the estimated PT+OT costs per day in the 23 case mix groups devised by Acumen as well as the 10 SLP case mix groups. These findings strongly suggest that the classification model does not adequately address patient variables that impact costs. For example, while the largest SLP case mix group proposed by Acumen represents 66.7% of stays, it appears that only about 25% of those patients receive SLP services as no costs are attributed until the 75th percentile of patient stays in that group.

I believe that the currently proposed therapy case mix methodology is insufficient to assure patient access to care, particularly in those case mix groups presenting with extremely large variance and right-shifting of the per-diem payment distributions**.** I strongly recommend that Acumen identify the factors that differentiate those patients who are likely to receive therapy services from those who do not so that providers that admit patients unlikely to receive therapy would not be overpaid while those admitting patients likely to receive therapy services are not underpaid.

h. General Data Concerns

I recognize that this project requires a massive amount of data analyses. However, in the February 2015 Therapy TEP Acumen described conducting a regression analysis on over 700 variables that may impact therapy services, yet presented only limited data and charts on two of the variables (sub-populations) examined. At that time the other TEP panelists and I requested the complete results to help inform our feedback. However, this requested data has yet to be provided. I recommend that the regression analysis data of the over 700 items tested that was reported at the February 2015 TEP be shared with the TEP panelists for comment.

Similarly, while the materials presented in the June 15, 2016 TEP include regression analysis results for determining the selection of some individual variables for therapy, results for all variables considered was

not presented. I recommend that the regression analysis for all therapy variables investigated as part of the June 2015 TEP be shared with the TEP panelists for comment.

Additionally, the results presented on the predictive power of the individual items selected for the PT+OT component (and the SLP component) demonstrate relatively weak predictive power (range ~5% or less). I note this as a broader issue in Section 2, Data and Methods. I also do not see any data presented that reflects whether the predictive power of the combination of the variables selected and proposed by Acumen in the PT+OT or SLP models is any better than that for the individual items, and whether the overall model performs any better than the existing SNF PPS therapy component. AHCA has attempted to simulate the proposed PT+OT model that created the 23 resident groups and has observed that it performs poorly. I recommend that Acumen conduct a comparison of the predictive power of the proposed therapy payment model with the existing SNF PPS therapy component and share the results with the TEP for comment.

Additionally, I note inconsistencies and errors in the data presented in the June 15, 2016 TEP and the updated version of the TEP Background Packet that was disseminated on June 28, 2016. For example, Table 17 in the TEP Background Packet appears to have mislabeled clinical categories. I recommend that Acumen conduct additional quality checks on the data presented to the TEP and resend corrected data tables to the TEP for comment.

i. Considerations for Other Sub-Population Options

I also reiterate my concerns that separating the therapy component into a PT+OT and separate SLP component is supported by the evidence presented at this time. However, in the spirit of offering constructive ideas within the context of the proposed approach I offer the following recommendations that could potentially apply to a single or split therapy component model.

I strongly recommend that Acumen investigate the utilization patterns of beneficiaries with other diagnoses present in any position on the hospital claim. In particular, I highlight dementia diagnoses[18]. During the February 2015 SNF PPS Therapy Component TEP hosted by Acumen, the TEP panelists were asked to consider sub-populations that could have characteristics that could impact therapy utilization. In addition to the ideas I presented then, I asked if AHCA could conduct additional analysis to help provide a more detailed response.

When AHCA looked at the Medicare 5 percent SAF data (Table 4A-6, below), hospital diagnoses for SNF patients in FY 2014 (plus 2 quarters), SNF patients with dementia stood out as having different service delivery patterns than non-dementia patients (typically lower costs per day, longer length-of-stay, and higher standardized per-stay payments). This pattern was relatively consistent for all the clinical groups AHCA studied with the exception of stroke patients who showed higher standardized payments per-stay with non-dementia patients.

[18] Specifically, the following ICD-9 codes (or ICD-10 equivalents): 290, 291.2, 294.1, 294.2, 292.82

Table 4A-6. SNF Service Delivery Patterns All Diagnoses vs. Dementia Diagnosis – FY 2014 (plus 2 quarters) (AHCA/Moran)

SNF Patients FY 2014	All Diagnoses	Dementia Diagnosis
Percent of Total Patients	100%	28%
Percent of Total Stays	100%	25%
Percent of Total RUG Days	100%	29%
Average Length-of-Stay	29.2 days	33.0 days
Standardized Payment Per-Stay	$14,335	$16,036
Standardized Payment Per-Day	$491	$486

To further explain my concern, the following are two examples of the distribution of LOS for SNF stays by condition comparing patients with lower extremity orthopedic surgery and dementia in FY 2014 plus two quarters with those without dementia (Figures 4A-1 and 4A-2). Notable is that the non-dementia patient stay distribution in Figure 4A-1 is left skewed with half of the stays being 19 days or less, while half the patients with dementia (Figure 4A-2) had stays of over 34 days. Additionally, 4.8 percent of dementia patients utilized their entire 100-day benefit period while only 1.5 percent of non-dementia patients did so. It is unclear whether Acumen's proposed payment model adequately accounts for such differences using available clinical information. In particular, I ask that Acumen explore whether there yet-to-be identified patient characteristics that can help identify individuals more likely to require skilled services for the entire 100-day benefit period.

Figure 4A-1. Distribution of LOS for SNF Stays for Lower Extremity Orthopedic Surgery Without Dementia FY 2014 + 2 Quarters (AHCA/Moran)

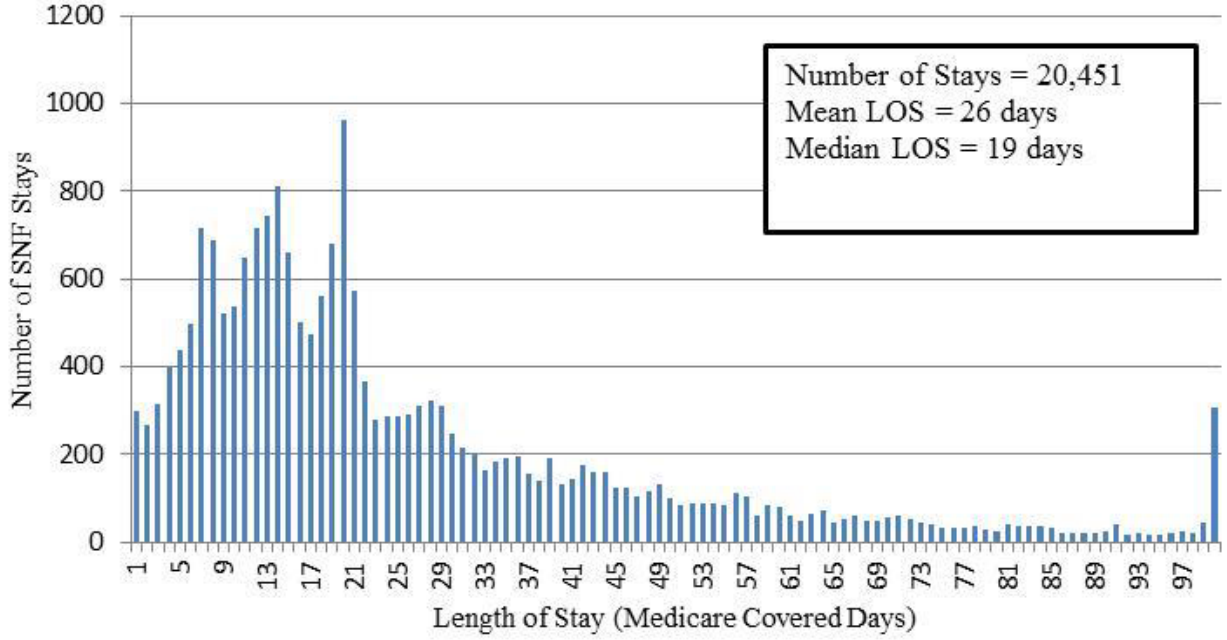
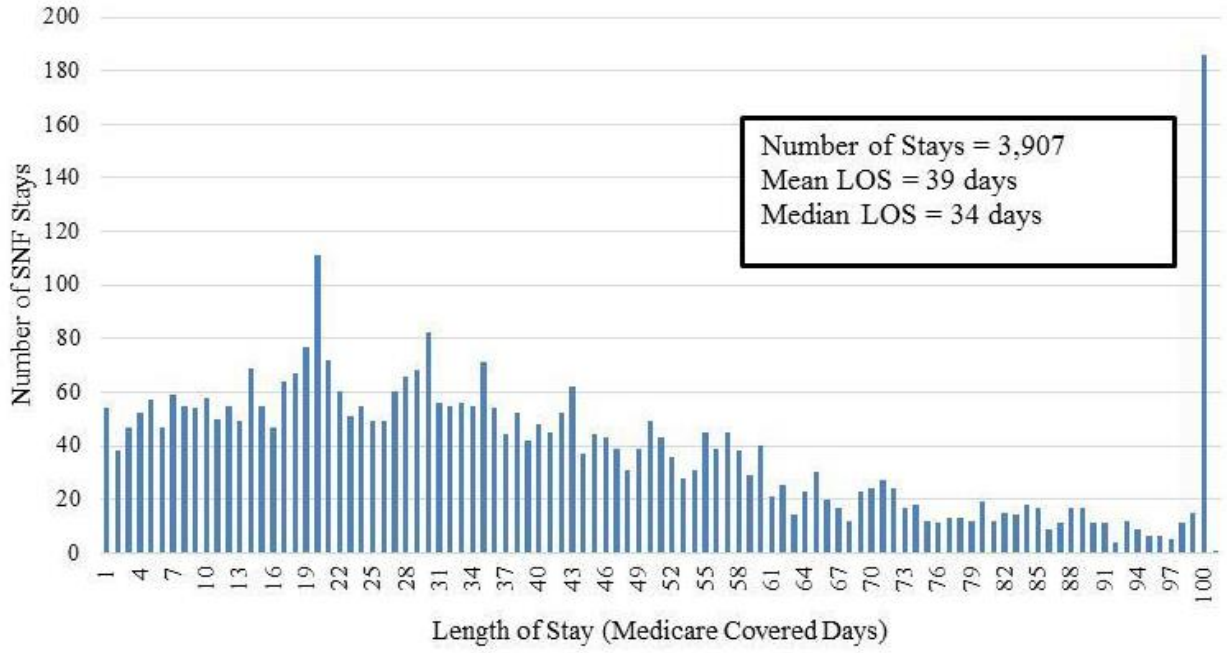


Figure 4A-2. Distribution of LOS for SNF Stays for Lower Extremity Orthopedic Surgery with Dementia FY 2014 + 2 Quarters (AHCA/Moran)



It is notable that while the standardized payments per-day for the two examples of the distribution of LOS for SNF stays by condition comparing patients with Lower Extremity Orthopedic Surgery and dementia in FY 2014 plus two quarters with those without dementia are very similar (Table 4A-3), the notable differences in length-of-stay patterns results in markedly different total payments (Figures 4A-3 and 4A-4). It is particularly important in the context of a proposed front-loaded per-diem payment methodology that not only is the non-dementia patient per-stay payment distribution left skewed (Figure 4A-3) while the dementia population distribution is relatively flat (Figure 4A-4) – both distributions demonstrate a spike at the right side of the chart, most likely reflecting the costs associated with patients who utilize the entire 100-day benefit period. Similar patterns are also present in the AHCA analysis of other conditions combined with a dementia diagnosis.

Figure 4A-3. Distribution of Total Payments for SNF Stays for Lower Extremity Orthopedic Surgery without Dementia FY 2014 + 2 Quarters (AHCA/Moran)

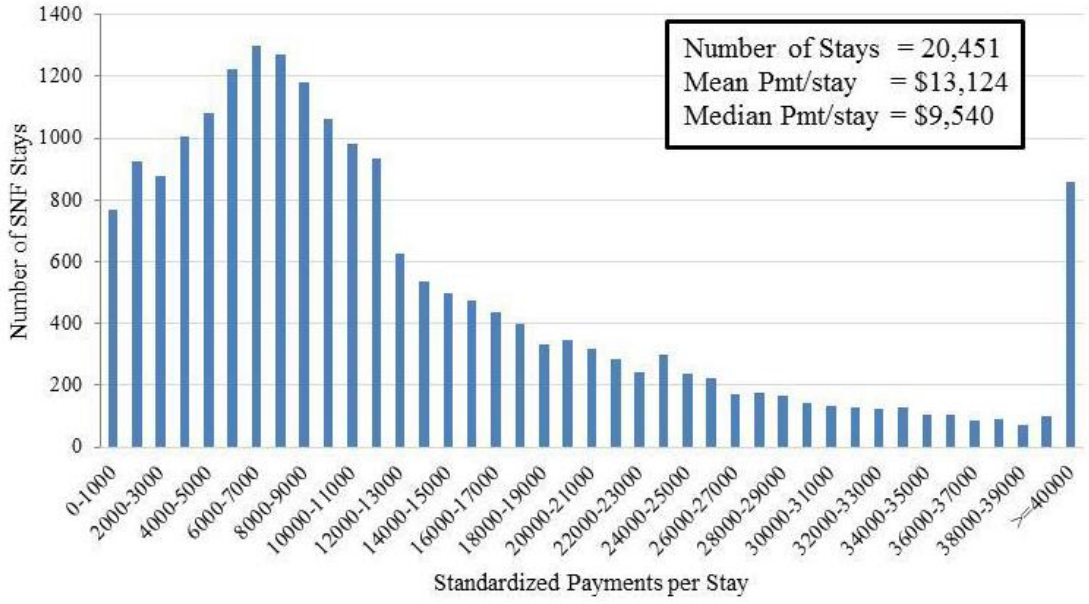
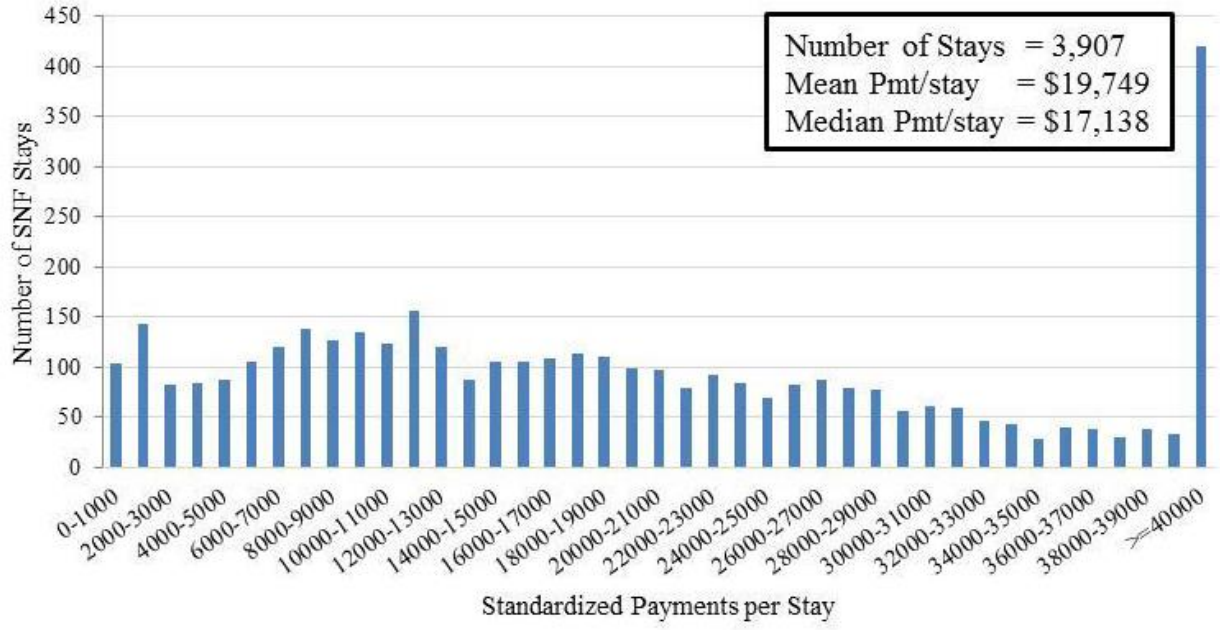


Figure 4A-4. Distribution of Total Payments for SNF Stays for Lower Extremity Orthopedic Surgery with Dementia FY 2014 + 2 Quarters (AHCA/Moran)



I recommend that Acumen conduct analysis of the characteristics of patients that utilize the entire 100-day benefit period from short-stay patients, as well as the clinical characteristics of sub-populations (e.g. dementia) that demonstrate significantly different utilization patterns.

j. Other Sub-Populations – Elective vs Emergent Inpatient Procedures

Another example of a variable within the group of patients with Lower Extremity Orthopedic Surgery conditions that has been identified as important through the Comprehensive Care for Joint Replacement Payment Model (CJR) program[19] is the differentiation between elective and emergent joint replacements. Following is an excerpt from the CMS CJR Final Rule.

> *Our analysis showed that episodes with hip fractures, identified by historical anchor hospitalization claims with an ICD–9–CM hip fracture code as the principal diagnosis, have approximately 70 percent greater historical average episode expenditures than episodes without hip fractures, even for episodes within the same anchor MS–DRG, confirming analyses shared by some commenters that also showed episodes with hip fractures to have significantly greater average expenditures. PHA [partial hip] episodes and emergent episodes had similarly higher historical average expenditures than TKA and THA episodes and non-emergent episodes, respectively. There are clearly patient specific conditions that lead to significant episode expenditure variations, even within the same MS–DRG.*
>
> *On the basis of the comments and our further analysis, we agree with commenters that proper risk adjustment is necessary to appropriately incentivize participant hospitals to deliver high quality and efficient care (page 73339).*
>
> *In light of the comments and our additional analysis, we will modify our proposed policy to risk stratify, or set different target prices, both for episodes anchored by MS–DRG 469 vs. MS–DRG 470 and for episodes with hip fractures vs. without hip fractures. By adding hip fracture status to our risk stratification approach, we believe we can capture a significant amount of patient-driven episode expenditure variation (page 73340).*

This is an example of a data-supported clinical variable that CMS has applied in other payment models that does not appear to have been considered in the proposed payment model approach presented by Acumen.

Prior health service use is another factor discussed in the February 2015 Therapy TEP that I recommend Acumen look at further. There are a number of studies that indicate that functional recovery in a SNF is more difficult and takes longer to achieve if that stay was preceded by specific health events including 1) residing in a nursing facility, 2) multiple prior acute hospital stays, 3) emergency room visits and observation stays, and 4) admission to a long term care hospital (LTCH) or IRF immediately preceding the SNF stay.

For example, the AHCA analysis of claims from FY 2014 plus two quarters revealed a 28.7 day LOS of community-based admissions to a SNF as opposed to 36.7 days for beneficiaries that resided in a nursing facility (NF) in the 90 days prior to the qualifying stay. Notable is the that the payments per day for the prior NF residents of $467 was less than the $493 for community-based admissions. However, the total costs were greater due to the need for a longer LOS. Similarly, AHCA found that SNF admissions resulting from transfers from LTCH and IRF demonstrated utilization patterns dramatically different from the average SNF patient. Among these patients, the cost per day, LOS, and total payments during the stay were markedly greater than average. I recommend that Acumen closely examine such prior health service use data that is

[19] 80 Fed. Reg. at 73, 273.

readily available to identify patient characteristics that are unique to these sub-populations so that they are not disadvantaged by the proposed payment model.

k. SNF MDS-Driven resident characteristic variables

In the June 15, 2016 TEP Acumen presented a proposal that the five PT+OT clinical categories would be subdivided into 23 case mix groups based on a CART analysis using two MDS-derived resident characteristic variables (please note my concerns about the CART approach, above, in Section 2, Data and Methods). These variables are 1) a "functional" measure developed by Acumen that is based on MDS items associated with transfer, toileting, and eating self-performance scores, 2) a "cognition" measure based on an MDS item associated with a resident's ability to make him/herself understood.

Additionally, Acumen proposed that 2 SLP clinical categories would be subdivided into 10 case mix groups using three MDS-derived variables. These variables are 1) a "cognition" measure based on an MDS item associated with a resident's ability to make him/herself understood (same as that used for PT+OT classification), 2) a "swallowing disorder" measure based on a MDS item associated with the presence or absence of a swallowing disorder", and 3) an "Eating ADL" measure based on a MDS item associated with eating self-performance.

l. Acumen Function Measure Concerns

I strongly oppose the proposed approach to develop a functional measure based solely on statistical expediency that does not align with mobility and self-care measures already in use for the SNF population (e.g. existing MDS ADL score, 5-star), or cross-setting PAC mobility and self-care outcomes measures that are being developed under the IMPACT Act. I cannot understate the importance of using an appropriate assessment of function in PAC payment modeling. Adding to the proliferation of SNF functional measures with another untested and invalidated measure is duplicative and confusing. Additionally, differences in the measure definitions and how they are reported and used can create conflicting incentives and result in access to care problems.

i. IMPACT Act Function Outcome Measures.

I note that on May 5, 2016, RTI International conducted a TEP under another CMS contract that was titled *"Development of Functional Outcome Quality Measures for Skilled Nursing Facilities (SNFs)."* This TEP discussed the research conducted in the development of quality measures reflective of quality of care of PAC settings that are aligned. In the discussion, the TEP panelists emphasized the importance in capturing and reporting a range of functional items as SNF patients present with a broad range of mobility and self-care capabilities from total dependence to total independence if fully rehabilitated. These items are based on the tested and validated Continuity Assessment Record and Evaluation (CARE) Item Set, which was designed in part to standardize the assessment of a person's functional status across acute and post-acute settings.

The development of the CARE Item Set and a description and rationale for each item is described in a report entitled *The Development and Testing of the Continuity Assessment Record and Evaluation (CARE)*

Item Set: Final Report on the Development of the CARE Item Set.[20] Reliability and validity testing of the CARE items were conducted as part of CMS's Post-Acute Care Payment Reform Demonstration (PAC-PRD), and CMS concluded that the functional status items have acceptable reliability and validity. CMS has indicated that it intends to develop, test, and then utilize function-related items contained in Section GG of the MDS for these outcomes measures to align with the existing IRF functional outcome measure to align with the existing IRF functional outcome measures. I recommend that such testing be conducted in the SNF functional data collected before applying the items of a SNF payment model.

For example, a recent study examining the association between comorbidities and a standardized PAC functional assessment tool found that functional assessment is critical and that comorbidity data is not robust enough to serve as s surrogate for functional assessment. I believe the approach proposed by Acumen of hand-picking limited items related to function aimed at representing the range of function addressed by SNF therapists described below will prove to be lacking when aligned with the existing IRF functional outcome measure.

I also note that Section GG of the IRF-PAI also includes information related to a patient's functional status prior to the current illness, exacerbation, or injury. Much evidence has demonstrated the importance of prior functional status. For example, a recent study found that not only was functional status at admission to a SNF a good predictor of outcomes, so was the patient's functional trajectory prior to the Medicare qualifying hospital stay.[21] Furthermore, other research has demonstrated that currently available hospital information is an insufficient proxy for predicting function. For example, a recent study examining the association between comorbidities and a standardized PAC functional assessment tool found that functional assessment is critical and that comorbidity data is not robust enough to serve as s surrogate for functional assessment[22]. I believe the approach proposed by Acumen of hand-picking limited items related to function to represent the range of function addressed by SNF therapists described below will prove to be lacking.

I recommend that Acumen seek insights from the CMS IMPACT Act functional quality measures contractor developing the SNF and cross-setting PAC functional assessment measures to coordinate efforts on developing a payment model approach that adequately addresses multiple functional domains using items that currently are, or will be available in the near future**.**

ii. IMPACT Act Function Process Measures

On August 4, 2015, CMS published the FY 2016 SNF PPS Final Rule[23] which finalized the adoption of the Percent of LTCH Patients with an *Admission and Discharge Functional Assessment and a Care Plan measure that addresses Function* measure (NQF #2631; endorsed on July 23, 2015) for use in the SNF Quality Reporting Program (QRP). Per CMS, this quality measure reports the percent of patients or residents with both an admission and a discharge functional assessment and an activity (self-care or

[20] https://www.cms.gov/Medicare/Quality-Initiatives-Patient-Assessment-Instruments/Post-Acute-Care-Quality-Initiatives/CARE-Item-Set-and-B-CARE.html

[21] Buurman B, et al. *Trajectories of disability among older persons before and after a hospitalization leading to a skilled nursing facility admission*. JAMDA. 2016. 17:225-231.

[22] Kumar A, et al. *Examining the association between comorbidity indexes and functional status in hospitalized Medicare fee-for-service beneficiaries*. Physical Therapy. 2016, 96:232-240

[23] https://federalregister.gov/a/2015-18950

mobility) goal that addresses function. The new mobility and self-care items used are included in a new section of the MDS titled Section GG, that SNF providers will begin submitting October 1, 2016, with the intent of transitioning to the Function Outcomes measure (discussed above) in the near future. In the Final Rule, CMS indicated that they believe that the 6-level scale and additional items in Section GG will allow the agency to better distinguish change at the highest and lowest levels of functioning by documenting minimal change from no change at the low end of the scale, which is important for some of the most complex cases treated in SNF.

It is notable that on page 46450 of the FY 2016 SNF PPS Final Rule, CMS recognized the inadequacy of the currently used Section G mobility and self-care items and assessment schedule to accurately reflect a beneficiary's admission function as compared to the new Section GG items and assessment schedule as follows:

With regard to the assessment time frames, for the MDS items located in section G, the assessment time frames take into consideration all episodes of the activity that occur over a 24-hour period during each day of the 7-day assessment period, as a resident's ADL self-performance and the support required may vary from day to day, shift to shift, or within shifts. As stated in the CMS MDS 3.0 Resident Assessment Instrument manual, "the responsibility of the person completing the assessment therefore, is to capture the total picture of the resident's ADL self-performance over the 7-day period, 24 hours a day (that is, not only how the evaluating clinician sees the resident, but how the resident performs on other shifts as well.

The CARE function items in the proposed functional quality measures, to be nested in the proposed Section GG, have a shorter assessment time frame (3 calendar days), which is standardized across the PAC settings, based on the need for data reflecting the

resident's status at the time of admission and discharge. For admission, the CARE function items are to reflect the status of the person as the person is admitted to the SNF; in other words, self-care and mobility limitations present at the time of admission.

If the admission assessment is not completed early in the stay, the admission score may reflect improvement already achieved by the resident due to treatment provided. In other words, functional improvement would not be reflected in function scores if the admission assessment is conducted after therapy has started and impacted the resident's status or before therapy ends.

During the June 15 TEP, Acumen had suggested that while they had developed the proposed therapy component payment model using MDS Section G functional items, they saw no potential problems with transitioning the payment model to use Section GG items in the future because they built the proposed model on items with similar functional domains. I strongly disagree with this assumption. As described above, in CMS' own words, there are notable differences in the definitions, scoring, and assessment periods for functional items of similar domains between Section G and Section GG. In addition, Section GG contains more diverse functional items than Section G. If not, there would not have been a need to create Section GG items in the first place. To make such a transition in the future would require significant effort to test, validate, and recalibrate the proposed Acumen model using Section GG data.

I recommend that Acumen seek to collect and analyze MDS Section GG mobility and self-care data to assess the feasibility for the proposed payment model rather than the Section G item data that presents with the significant limitations cited by CMS in the FY 2016 SNF PPS Final Rule.

iii. SNF Nursing Home Compare Function Measure

Earlier this year CMS introduced the SNF Short-Stay Improvements in Function Measure to the Nursing Home Compare Quality Measure system to assess the percentage of short-stay residents whose independence in three mobility functions (transfer, locomotion and walking) changes over the course of the SNF stay. Per the following discussion excerpted from the measure specifications, other readily available MDS variables are recognized as important and are included as covariates in the risk adjustment methodology for this measure:

> *"Several resident characteristics and clinical conditions can influence the increase in independence made by short-stay residents on transfer, locomotion, and walking during their episodes of care regardless of the quality of care provided by the nursing home. To adjust for these resident characteristics and conditions, the measure includes covariates based on residents' status on the prior assessment for age, cognitive impairment, heart failure, stroke, hip or other fracture, and long-form activities of daily living (LFADL) scale scores. By accounting for differences in resident characteristics that may independently affect independence in transfer, locomotion, and walking, risk-adjustment permits fairer comparisons of the performance of nursing homes that serve residents with different characteristics and clinical conditions."*

Specific MDS item details are described in the technical requirements document for this measure[24].

iv. Acumen Cognition Measure Concerns

I strongly oppose the proposed approach to select a single MDS item that only reflects a resident's ability to make themselves understood, and characterize this single item as representative of the broad concept of "cognition".

1. Multiple Domains

The AHCA/Moran sub-population analysis of FY 2014 plus two quarters suggests that patients with diagnoses associated with cognitive impairments (e.g. stroke, dementia, and psychiatric illness) have distinctly different utilization patterns from those without such conditions. The approach selected in this proposal appears to have been selected for convenience and simplicity, rather than to determine the best way to predict the impact of cognitive impairment on therapy services. Numerous domains of cognition that need to be considered and addressed within an interdisciplinary rehabilitation plan of care include: a) making themselves understood; b) understanding others; c) short-and long-term memory; d) information processing; and e) functional cognition. It is inappropriate to simplify such an important factor influencing clinical care for statistical expediency.

[24] https://www.cms.gov/Medicare/Provider-Enrollment-and-Certification/CertificationandComplianc/Downloads/New-Measures-Technical-Specifications-DRAFT-04-05-16-.pdf

2. Align with IMPACT

Additionally, any items selected should be expected to be available once the proposed new payment model would be implemented. I note that on April 7-8, 2016, Rand Health conducted a TEP under another CMS contract that was titled *"IMPACT ACT of 2014: Development and Maintenance of Post-Acute Care Cross-Setting Standardized Patient Assessment Data."* In the Cognitive Status session, there was extensive research presented and discussion related to neurocognitive functioning domains including 1) cognitive skills for daily decision making (IADL), 2) impaired communication, 3) judgement, decision making and safety, 4) executive function, 5) learning and memory, and 6) affect. Additionally, one specific MDS item discussed in that TEP that does not appear to have been considered by Acumen is the Short CAM (C1310 A-D). Those TEP panelists emphasized the importance of measuring multiple domains of cognition and not rely on a single item or domain. I recommend that Acumen seek insights from the CMS IMPACT Act contractor developing these cross-setting PAC assessment data items to coordinate efforts on developing a payment model approach that adequately addresses multiple cognitive domains using items that exist or will be available in the near future**.**

3. Proposed Approach to Therapy

I offer the following list of principles I believe that Acumen must account for in any proposal to revise the SNF PPS therapy component. Patient-centered SNF rehabilitation therapy service delivery reflects the complexity of the functional need characteristics of the beneficiary. Any proposed SNF payment model, or component of a payment model based on patient characteristics:

- Must align with other CMS and legislative initiatives (e.g. IMPACT, BPCI, CJR) that seek to pay for broader bundles of services.
- Must include a range of meaningful factors that reflect the patient needs addressed under a PT, OT, and/or SLP plan of care.
- Must account for the differences in patients likely to require therapy services from those that do not.
- Must account for the differences in patients requiring one therapy discipline, or a combination of two or all three therapy disciplines during their stay.
- Must account for the differences in patients likely to need long stays (e.g. complex/chronic/maintenance care) often resulting in long-term placement, from those needing short stays often resulting in discharge home.
- Must contain patient groupings that have face validity as clinically logical.
- Must demonstrate a demonstrable improvement in the predictive power as compared to the current payment system to justify any increased complexity or increased administrative burden associated with the model.

- Must be thoroughly tested for patient access, particularly with high-risk sub-populations and in low-volume/rural settings.
- Must be stable across multiple years or at a minimum be able to be updated on an annual basis in a way comparable to other payment models based on patient characteristics.

To accomplish this, I believe that there are important patient characteristics, based on the results of a recent AHCA analysis of FY 2014 plus two quarter claims that I have previously discussed, that need to be explored further. I strongly recommend that the following factors be analyzed and considered as payment variables, or at the least, as part of an impact analysis to assure that certain patient or provider populations with different length-of-stay patterns are not impacted in a way that would result in access to care issues for patients with specific characteristics. These variables include:

- Clinical Groupings:
  - Patients with dementia diagnoses (as discussed above)
  - Patients with elective versus emergent orthopedic surgery (as per the CJR precedent)
  - Patients with multiple significant trauma
  - Amputees
  - Patients with psychiatric conditions
- Patient Demographics:
  - Age
  - Gender
  - Dual eligibility status (insert recent article)
  - Type of Medicare enrollment (Aged, Disabled, ESRD)
- Facility Characteristics:
  - Facility Volume (covered days per year)
  - Location (Urban, Rural)
  - Dual Share
  - Type of Facility (Freestanding, Hospital-based [hospital SNF unit vs. Swing bed])
- Ownership
  - For-profit
  - Non-profit
  - Government

B. Non-Therapy Ancillary Services (NTAS)

In the fiscal year 2012 (FY12) proposed rule, CMS proposed a far more nuanced approach to an NTAS component which included both routine NTAS payments and non-routine NTAS payments for higher cost items. The proposed policy also included a High Cost Outlier policy. I understand the parameters of the Acumen work were to remain within CMS' existing statutory authority and to rely upon existing administrative data. However, AHCA research indicates that NTAS costs are virtually impossible to predict. The June 15 proposal assumes NTAS costs are predictable and I believe the June 15 proposal is a very simplistic approach to a very complex service area. Below, I offer an alternative approach which I believe offers the flexibility of the FY12 proposal without requiring statutory change. For your reference, I have included the FY12 proposal in Attachment C as well as AHCA's comments on the proposal. As you will note, we supported the effort and offered constructive comments.

Furthermore, I am deeply concerned about funding the proposed NTAS component using very old data on the proportion of the current nursing component costs assumed to be NTAS costs. The estimate dating back to the early 2000s is approximately 43 percent. During the TEP, Acumen indicated the new NTAS component would be funded by shifting funds from nursing using the historical estimate of 43 percent. As I discuss in the Nursing Component discussion, below, nursing practice fundamentally has changed in the past 16 years along with medical technology and such a simplistic approach could prove highly problematic.

As a simple illustration of the issues this could cause, I offer a simple calculation. The final FY17 unadjusted per diem rates for nursing are $175.28 for urban and $167.45 for rural. Simply removing 43 percent from the unadjusted nursing component per diem would result in approximately $99 for urban SNFs and roughly $95 per day for rural SNF nursing costs. Based upon AHCA member experiences, as well as with my own company, it would be impossible to attract and retain qualified nursing staff as such levels.

Nursing and related professional care is the corner stone of SNF care. What appears to be a rough estimate of funds removed from nursing to fund NTAS could destabilize nursing care and seriously impact access, quality and outcomes to SNF care for Medicare beneficiaries. I consider this a critical flaw in the overall design which must be addressed before any further work is conducted on an NTAS component which is funded by the nursing component.

<u>Recommendations</u>

- **Acumen should revisit the FY12 proposal and compare the proposal below. I also would like to understand why Acumen disregarded the FY12 proposal completely considering the amount of work completed on the approach and did not attempt to develop an alternative similar to the concept presented, below.**
- **Related to the presumption about NTAS funding, I strongly believe Acumen should develop a line of study, using existing data, which would offer a more current estimate of the proportion of nursing component funds associated with NTAS costs. Simply pulled funds**

from the nursing component without a better understanding of the implications of such a change could have profound impacts on care for Medicare beneficiaries.

- **As with therapy, AHCA has conducted considerable research on NTAS costs. I urge Acumen to schedule time with AHCA and its researchers to review the work and explore an alternative to the June 15 concept.**

a. Challenges with Proposal

The entire Acumen proposal for an NTAS component in the SNF PPS is premised upon the validity of its cost per day model based on charges on claims and reduction of charges to cost based on cost-to-charge data derived from facility cost reports. Above, I already provided an extensive critique that concludes that these data cannot be considered to be valid because they are not audited and updated as are hospital data by CMS. If these data are not valid, then all statements based on prediction of cost are not valid. As a result, I do not believe a predictive model can be implemented at this time. In future, such a model might be possible if additional data is collected but, as I understand it, Acumen must rely upon existing data for this exercise.

The assumption underlying this model is that NTAS cost can be predicted. I question whether this is a reasonable point of departure for design of a payment policy. Rather, I begin with the rationale for the need for an NTAS payment policy. The long standing concern asserted by MedPAC and CMS is that NTAS can account for significant cost that is not adequately compensated by the nursing component. Prior research suggests that nursing case mix does not correlate with NTAS cost. If NTAS costs are clustered around an average range of cost without significant "high cost outliers", then prediction might be reasonable. However, if the distribution of cost is such that very high cost patients could be admitted to any facility, such that the cost of NTAS could not be absorbed by the facility based on payments for average costs, then the result would likely be avoidance of admissions for high cost patients. Facilities might also refuse to provide certain services if doing so meant increasing their risk for facing unreimbursed costs. Given that a large proportion of SNFs have low Medicare volume, their ability to absorb uncovered costs for very high cost NTAS will be a capacity and access limiting feature of the payment system that does not provide precision targeting.

As you know, drugs have long been assumed to make up the majority of NTAS costs. To better understand this issue, AHCA's researchers conducted a study of about 50,000 Part A SNF stays using donated pharmacy data, to understand the distributions and patterns in the costs for drugs, which are believed to make up the bulk of NTAS costs. In brief, the findings indicate that high cost drugs are generally a low frequency occurrence, and that about two thirds of SNF stays involved NTAS drug costs in the range below $30/day. The one third of SNF stays with costs above $30/day, cluster around costs per day in a moderate range and then about five percent of stays involve very high costs in the range of $200 per day or higher. The risk for uncovered NTAS drug costs then is relatively low in frequency. The higher cost range is a threat to facility viability, patient access and medical capacity expansion.

Therefore, any predictive model that cannot precisely target these high cost cases, will fail from a policy perspective because it will routinely overpay providers whose data conforms to the predictive model, and

underpay the actual high cost cases that cannot be predicted. Our researchers conclude that high cost NTAS cannot be predicted based on patient characteristics with the precision required to address the relevant policy problem, regardless of statistical results, and because of the nature of the clinical practice that results in a very high cost NTAS situation.

Our researchers furnished an example based on drug utilization, use of anti-infective drugs. The recent study shows that a large proportion of patients utilize relatively inexpensive anti-infective drugs, and a smaller but moderate proportion of patients utilize anti-infective drugs in the $18-$25 range which largely reflects higher dispensing fees associated with providing supplies for IV medications. There are a fair number of anti-infective drugs that are relatively expensive on a payment per day supply basis, but utilization of these drugs is quite low. The distribution of costs per day for the range of anti-infective drugs used in the SNFs studied is discussed, below.

While patient characteristics may identify patients needing anti-infective drugs with or without IV therapy, these data cannot predict the utilization of this range of cost. Upon a closer look at all drug utilization in the study, of 11 medications in the $200-plus payments per day supply category, three (or 27 percent) were anti-infective medications. There were also three medications identified as hematological agents and two identified as antineoplastic agents. Of the patient stays where one or more medications in the $200-plus payments per day supply category, 81 percent were for one of the three anti-infective drugs. These drugs included in order of utilization frequency:

- Linezolid (used for treatment of gram-positive bacteria resistant to other antibiotics including VRE and MRSA);[25]
- Fidaxomicin (used for treatment of pathogenic Clostridium difficile); and
- Posaconazole (used as an anti-fungal for treatment of Candida and other species in immunocompromised patients).

This example illustrates that high cost NTAS are likely to be a highly specific clinical response to a complex problem that occurs infrequently and cannot be predicted without a complex array of data, none of which are consistently available in existing data sources. If the intent of NTAS payment policy is to ensure that payment can be targeted in order to enable SNFs to care for actual patients who need these drugs and other high cost NTAS, the payment must be targeted by actual data, not be based on highly limited predictive models.

I would also argue that diagnosis codes are poor predictors of high cost NTAS. The distribution of patients with a given acute or chronic illness will, in most cases, be treated with an array of drugs or other interventions that, while often representing lower frequency occurrence than anti-infective drugs, have similar patterns. While there may be a few conditions with predictable NTAS costs (e.g., HIV, transplant status), these are very low frequency situations and they are not representative of other conditions with a

[25] While there is a MRSA variable in the MDS, there is not one for VRE, for different types of infections by ICD-10 code, or for immunocompromised patient status.

broader array of treatment options which will represent a greater proportion of the overall need for the policy.

All of Acumen's work is based on two assumptions, each of which I do not believe can be validated: 1) the cost of NTAS per day generated is accurate; and 2) NTAS cost can be predicted with enough precision to appropriately compensate providers for actual high cost NTAS patients. Acumen's proposal broadly would over-pay providers for NTAS while its lack of precision would have a "hit and miss" affect in paying providers who treat patients with high cost NTAS. The averages in the predictive model will not work because so many providers have low Medicare volume and because high cost NTAS are very low in volume. This type of reimbursement will not mitigate the perception of risk providers experience with respect to high cost NTAS and will continue disincentives to admitting high cost NTAS patients. I do not believe it will not solve any policy problems or improve either payment adequacy or payment accuracy. Below, I offer an alternative approach which I believe could address the challenges.

b. Recommendation

I propose a NTAS component that pays based on actual high cost NTAS experience, instead of a predictive model. AHCA's general counsel believes the proposed approach falls within CMS' statutory payment authority. A transition period would be needed for this proposal to allow for new data collection. However, I believe a starting point for the policy could be developed using existing data.

In general, NTAS costs cannot be predicted with sufficient precision to effectively target payment to the SNF that actually incurs particularly high NTAS cost. Therefore, NTAS payments should target actual costs incurred for individual patients. If payment is to target actual costs, then new documentation requirements need to be developed in order to report actual costs on claims. Documentation of NTAS costs also would need to be auditable. There is capacity in the claims infrastructure to provide space for this reporting. SNFs may need to work with their contract pharmacies and other vendors to conform invoicing to support the documentation and timing of claims. In turn, CMS could develop documentation requirements in rate setting for the 2018 proposed SNF rule, and would need to collect data for two years, at which point the parameters for a policy could be included in the FY 2020 or 2021 SNF rule. Documentation requirements could include:

- Established thresholds for reporting aggregate cost per day (SNF PPS) or per stay (reform proposal) for drugs. For example, based on our research, almost 65% of patients have <$30 per day in aggregate drug cost. Perhaps, the NTAS policy starts with reporting only when aggregate drug and/or other NTAS cost exceed $30 per day;
- Threshold for the number of drugs the patient is taking. We see in our research that high cost is driven by either a single high cost drug, or several drugs with moderate cost per day. Reporting the number of drugs that exceed a certain threshold cost per day would be another useful element of documentation;
- Define other NTAS services to be reported: 1) respiratory therapy; 2) radiology; 3) supplies and equipment that meet certain criteria (as examples. This could include supplies and equipment dedicated to an individual patient and cannot be re-used, exceed a certain cost threshold, or

exclude high cost equipment that can be used by multiple patients unless an amortized unit cost can be developed based on a study;
- CMS could use value code fields for reporting actual aggregate cost above thresholds, assigning different codes to classes of NTAS (e.g., pharmacy, radiology). Invoices would need to be available for audit;
- Define a value code that reports number of drugs or number of drugs that exceed a cost per day threshold;
- Healthcare Common Procedure Coding System (HCPCS) codes could be used for specific services and value can be imputed to those services from other Medicare fee schedules; and
- A common unit of value (e.g., aggregate cost per day) would be used to define all values, and to which thresholds and payment parameters would be applied.

The NTAS policy would need to include a few key characteristics. First, a NTAS budget (similar to the other SNF components), against which NTAS payments are benchmarked, would be needed. The NTAS budget would be the target for total NTAS payments each year. Thresholds and other parameters would be established in an algorithm each year to predict total payments at the NTAS budget level.

Second, the SNF update would be applied to the NTAS Budget each year and payment parameters would need to be established based on the first two years of data collection, and could include tiers or no tiers at which proportional payment varies. If tiers are included they might pay lower proportions for the low range of high cost NTAS, with higher proportions for the highest cost. For example, reported NTAS in the lowest 40% of aggregate per day cost above the reporting threshold could be reimbursed at 60%, the next 40% at 70% and the top 20% at 80%. The proposed spread thins out as aggregate per day cost increases, so that the bands of costs in the lower tier have a more compressed range as these costs increase. There are many ways to do this. A no-tier approach might pay for all NTAS at the same proportional rate, though this may have to be a lower rate to fit the NTAS budget. A no-tier approach would offset more of the cost for more patients with low to moderate NTAS relative to what would be covered for the highest cost NTAS patients.

Payment parameters would need to be re-calibrated annually to adapt to changes in the mix of NTAS and to correctly estimate the NTAS budget. Overpayment or underpayment of NTAS would result in a budget neutrality adjustment to other SNF component payments to achieve budget neutrality.

C. Nursing

As noted above, nursing and related professional care are the corner stone of SNF services and supports. Any changes must be carefully considered. Above, I have discussed how risky changes to the nursing component to fund an NTAS component could be in terms of access to nursing care. Equally concerning is Acumen's framework for arriving at resident groupings and related amounts of nursing care. The proposal would rely upon an old study disregarded by CMS, itself, as well as unaudited and questionable CCR data. Of the components discussed, the foundation for nursing I find the most disturbing.

Recommendations

- **Acumen should conduct a careful study of current trends in care among health care setting to better understand the types of patients SNFs receive and increasing expectations for the level of clinical care due to these trends.**
- **Acumen should engage the TEP in a call or meeting on alternative data sources for assessing levels of needed nursing care.**
- **Acumen should consider a set of nursing and related professional care principles (see below) when designing the nursing component.**
- **Acumen must be able to assure beneficiaries and providers adequate resources will be available for nursing and professional care delivery.**

1. Challenges with Proposal

Below, I offer two areas of concerns with the Acumen proposal. The first focuses upon significant changes in clinical practices as well as how other health care providers interact with SNFs. The second provides further observation on issues with use of STRIVE data.

a. Clinical and Health Care Provider Operational Changes

Acumen asserts a "key assumption" that "relative costs of nursing services across types of residents have remained stable since 2006-2007." The evidence Acumen presents is incomplete and ill informed. I would point out that since 2006-2007 an array of significant changes have occurred impacting nursing and professional clinical care.

First, innovations and expansions in home and community based services, medical home programs and other approaches to alternatives to long term nursing facility (NF) placement have proliferated in different parts of the country. This results in increased frailty and debility in the NF population over time. The NF population rotates through the SNF beds when hospitalized, so the flow of NF patients through the SNF has changed over time. The overall staffing mix for facilities based on the overall patient mix may well have changed in relation to change in population. Acumen has not looked into this. We have not measured this change but it is a hypothesis that could be tested and is likely to have some validity based on known patterns of change that vary across the US.

Second, hospital practices have changed in major ways over this time period, and these changes affect referral patterns to SNFs. And, hospitals have experienced technical innovation in medical practice increasing the volume of laparoscopic and other less invasive surgical procedures that shorten stays and allow more patients to go home, rather than convalesce in transitional care situations. These procedures also have affected patterns of complications. Many of these changes result in changes in those community residents referred into SNFs, such that referrals are likely to be for those with greater complexity, frailty, cognitive impairments, and inadequate supports in the home to rely upon home care. None of these factors have been measured over time, but again, this is a hypothesis that can be tested and is likely to have some validity based on known changes in hospital utilization.

Hospitals also have become subject to value based purchasing penalties during this time period, particularly related to Medicare Spending Per Beneficiary (MSPB) and re-admission penalties, including measures specific to populations that represent significant SNF admissions. Hospitals have been surveying, and sending RFPs to SNFs asking about their clinical practices, length of stay, capacities to align clinical protocols for certain types of residents, and other factors. This information is being used by hospitals to adjust SNF referrals to better manage their performance under these measures. While hospitals are not permitted to limit patient choice, there is ample evidence reported in MedPAC discussions and reports, and by SNFs through industry channels, that "soft steering" is occurring, and that hospital/SNF relationships have changed in many areas. Hospitals have been reported to send their staff to SNFs to provide training to nurses in SNFs so that IV therapy protocols, infection control, and other techniques can be standardized to improve care and to ensure continuity from hospital discharge through the SNF stay. The intensity of these interactions varies across the country. Other payer pressures, including Medicare Advantage, also drive this sort of activity. This type of activity not only changes the mix of patients in SNFs and across different types of SNFs, but drives changes in nursing staff mix and training. These changes have intensified over the last 5 years, but have not been measured. However, this hypothesis could be tested and is likely to have validity based on widely reported changes in hospital/SNF interactions.

CMS also has impacted hospital and SNF interactions. Specifically, hospital behavior and referrals to SNFs have also been affected by the demonstrations and reforms that have flowed out of CMS's Innovation Center. Accountable Care Organizations/Shared Savings Programs (ACOs/Pioneer ACOs/SSPs), the Bundled Payments for Care Initiative (BPCI), and most recently, the CJR program, have engaged hundreds of US hospitals in programs to re-design care pathways, including post-acute care. These ventures are provided with SNF cost data and have strong incentives to lower the costs of post-acute care. This results in intense pressure on SNFs to shorten length of stay, which in turn results in a myriad of pressures on nursing and therapy practice. SNF payment policy under the SNF-PPS continues to reward longer stays, but pressures from hospitals threaten referrals for SNFs with longer stays. All of these forces together are expanding, and are pressuring SNFs to evaluate and test a wide variety of reforms to clinical practice.

Third, specific clinical problems have surfaced in hospitals with increased frequency, such as multi-drug resistant infections requiring longer term post-acute IV antibiotic therapies with strict infection control that not all SNFs can provide. SNFs need to decide if they can implement the services hospital need, assuming the risks and needs to up-grade training, staff mix and other capacities to preserve referral relationships.

Fourth, similar to hospitals, physician practice also now is subject to value based purchasing financial incentives. In 2014, physicians began receiving reports that show all the Medicare FFS payments for all services in a year for patients attributed to their practices based on primary care services. In 2018, even solo practitioners will become subject to penalties or incentive payments up to 4% depending on their performance on resource use measures. These reports will make SNF costs visible to physicians along with other costs. Our researchers inform us that physician practice managers are reportedly advising practices in various approaches to cost containment to avoid risk for penalties. Some of these pressures target hospitalization and re-hospitalization rates, and the use of post-acute services. Physician awareness of SNF cost, together with the relationship of SNF utilization to hospitalization, are likely to alter the way in which physicians make decisions about referrals, and their communication with SNFs. This behavior is very new and it is too soon to measure its effects, but these policies have been implemented and will be continued in a phased in manner in the new physician payment system to be implemented in 2019.

Physicians have also been provided with new CPT procedure codes and associated payments for coordinating care between hospitals, SNFs and home, with the goal of increasing physician involvement in care coordination. New codes and payment have also been implemented increasing physician roles managing care for patients with multiple chronic illness, which potentially includes most SNF patients. Additional care coordination codes are being considered for implementation and payment in 2017 and beyond. These changes are designed to direct increased funding to improve care coordination for patients at high risk for preventable hospitalization and to smooth transitions between institutional care and return to the community. All of these changes are highly relevant to SNF patients and will materially change the nature of communication between physicians and SNFs around patient-centered care. These interactions will change the role of some nurses in SNFs as they increase interaction and coordination with physicians, and physician extenders taking on these new roles.

b. STRIVE is not a valid foundation for revising case-mix indexes in an alternative payment system.

The validity of STRIVE data is hobbled by widely held concerns about its representativeness, reliability, and accuracy. AHCA and others have previously expressed grave concerns about the representativeness, reliability, validity, and accuracy of the nursing and therapy weights developed based on data from STRIVE. CMS itself ruled out using STRIVE as basis for Five-Star staffing risk adjustment based on concerns of numerous stakeholders about the predictive power of the STRIVE-based system.

In an analysis of STRIVE sampling methodology and its implications for the 2010 SNF NPRM, Lewin, on behalf of AHCA and the Alliance for Quality Nursing Home Care, identified several potential problems with the sampling design and representativeness that could invalidate the results of the STRIVE study.

Key concerns included the lack of adequate sample size (including no sample at all) by RUG category, by admission type, and by patient type as well as by assessment day (short-stay vs. long-stay). Wide standard deviation and confidence intervals around some of the estimates also raise questions about applying STRIVE data to all patient types at all stages of care from admission, midcourse, to discharge.

In addition, STRIVE does not acknowledge all members of the interdisciplinary care team critical to the care and services for patients. Members of the care team such as social worker, pharmacist, dietician activities staff are not included in STRIVE. These are key contributors to the care for patients and excluding them

from STRIVE undermines the foundation of interdisciplinary care. For a more detailed discussion of STRIVE, see my observations on data in Section 2, above. The Acumen proposed design of the nursing component does not reflect or capture current SNF patient population and relative costs of nursing services.

CMS' use of STRIVE to determine resident-specific nursing costs is based on the assumption that the SNF population and relative costs of nursing services have not changed in the decade since the STRIVE study. Although CMS acknowledges that data show changes in the functional status of SNF patients since that time which is an important indicator of increased acuity.

In addition, CMS fails to recognize the wide-ranging changes over the past decade in patients that SNFs serve and in the clinical and operational requirements for serving those patients. For example, patients admitted to SNFs are arriving with greater complexity in their needs and with less stability of their clinical status. This is driven by changes in hospital discharge practices resulting in quicker discharges from hospital to SNF and by changes in care delivery where more stable patients are going directly home versus to a SNF leaving acutely ill patients who require intense care after the short few day hospital stay. Care delivery is also changing due to expectations for SNFs to provide care and services in house for acute changes in conditions, complex treatments and procedures versus sending the patient to the hospital which would result in a rehospitalization, a frowned upon event that has financial and quality implications for the patient, hospital, payer and SNF.

In addition, STRIVE data and the RUG system does not adequately represent current patient groups in terms of the prevalence of dementias, cognitive impairment, mood disorders, and behavioral health issues, that are known to be complicating factors in providing nursing care and growing population of individuals who require SNF services. Specific complex conditions and treatment SNFs provide care for are not reflected in the current RUGs**.** Specifically, care and treatment for individuals with nasogastric tubes, left ventricular assistive devices, bariatric, psychiatric, substance abuse disorders, in house labs, complex management of anticoagulation therapy or diabetes, multiple complex comorbidities are not acknowledged whatsoever in the RUGs or STRIVE.

Comorbidities cause significant complexity and are vastly ignored in this proposed redesign. There are also social, economic and cultural complexities that are not acknowledged in any manner in this proposal. These changes in SNFs are not reflected in data analysis because the current system is not designed to capture this information, however it is clearly known first hand to those practicing in SNFs and many who interact with SNFs.

The breadth and depth of changes in care and services offered by SNFs invalidate the use of the point-in-time STRIVE data for the purpose of developing the nursing index/component of the payment system. By freezing the case-mix indexes to a past point in time, CMS wholly discounts continual improvements and adaptations in clinical practice, guidance, and technology designed to best meet the needs of the current resident population. The SNF payment system is the only system that is not reviewed periodically and adjusted accordingly. This is a faulty design which negates the fact that every payment system needs to respond to changes in practice and is a foundational cause as to why the system does not adequately reflect current care and treatment in SNFs.

For all of the reasons noted above, the SNF payment system does not accurately characterize nursing practice today.

c. New Requirements of Participation Proposed Changes Fundamentally Impacts Nurse Staffing

As I have noted throughout this document, the proposed Requirements of Participation likely is one of the most significant changes in SNF operating requirements since the 1987 Nursing Home Reform Act, included in the Omnibus Budget Reconciliation Act of 1987 (OBRA 87).[26] The Requirements of Participation include an array of new nursing and other clinical staff changes. These changes also invalidate the STRIVE study and make necessary an approach to update required nursing credentials, responsibilities, and staffing.[27][28]

2. Recommendation

SNF payment system design should be tied to person-centered approaches, population health management, and quality outcomes. Through initiatives such as its Health Care Payment Learning & Action Network, CMS already has shared a vision for a health care system that provides person-centered care and optimal patient outcomes and experience, driven by new payment approaches that are person-centered and population-based. CMS is supporting this vision of health care delivery system reform through a range of initiatives that are patient-centered, sustainable, and provide incentives for outcomes and coordinated care (VBP, ACOs, episode-based payments, medical homes, quality/cost transparency). CMS has acknowledged that improving payment structures is a critical lever for incentivizing quality and value and has applied person-centered principles in payment for other settings such a HCB.

The proposed SNF RoPs emphasize person-centered principles throughout. However, this proposal runs counter to that by reinforcing silos of therapy, nursing, non-therapy ancillary services. It does not reflect the necessary shift and current practice of interdisciplinary care team collaboration and patient centered perspective. This proposed redesign is a step backward. It defeats CMS' stated purpose and plan for patient-centered care across the health care system. It is the same of what already exists and is known to be flawed.

Based upon the points above, I submit the following Principles of Person-Centered Professional Care and urge Acumen reconsider this proposal, focusing upon these principles**:**

1. The patient is seen and cared for as a whole person, not compartmentalized into body parts or functions.
2. Engagement of the interdisciplinary team is essential to the care and services for the patient according to their individual needs.
3. Person centered care is not task focused, rather it is focused on the person and their needs which is unique for each individual and cannot be accurately reflected in a categorical manner.

[26] Click here for more CMS information on OBRA 87.
[27] AHCA/NCAL Summary of Key Requirements of Participation. Click here.
[28] Consumer Voices for Quality in Long-Term Care Requirements of Participation Analysis. Click here.

4. Quality outcomes are the result of a comprehensive, holistic and individualized dynamic relationship between the direct caregivers, interdisciplinary team, support staff, patient and family.
5. Flexibility in provision of care and services is critical to desired outcomes and requires consideration of both quality of life and quality of care aspects.

I offer these with the understanding from CMS that person-centered planning principles are a proposed Requirement of Participation. Specifically, in CMS' proposed regulation, Medicare and Medicaid Programs; Reform of Requirements for Long-Term Care Facilities, Proposed Rule,[29] the agency discusses at length the need to formally build person-centered planning into the SNF Requirements of Participation (RoP). Specifically, on page 42185, the agency states, "The Department of Health and Human Services has issued guidance for implementing person-centered planning and self-direction in home and community-based services programs, as set forth in section 2402(a) of the Affordable Care Act. The principles in that guidance regarding dignity and self-direction apply equally to individuals who reside in a nursing facility. http://www.acl.gov/Programs/CDAP/OIP/docs/2402-a-Guidance.pdf. Our proposed requirements support those principles."

The structure of a payment system is critical for many reasons. One important reason is because it provides direction and substantial influence for how care is provided to the patients. Moving forward with the Acumen proposal enforces a dated structure known to produce suboptimal outcomes. Alternatively, redesigning the SNF payment system to reflect the above principles propels SNFs towards the CMS vision of health care delivery system reform and most importantly aligns payment with quality outcomes for the individuals being served in SNFs. I urge Acumen to seek an alternative payment design for these reasons.

[29] 80 Fed. Reg. 42, 168 (July 16, 2015).

D. Non-Case Mix

Non-case mix was included in the Acumen slides as a component but was not discussed during the TEP or in the packet. As you know, non-case mix includes items such as capital costs, dietary, and maintenance. As discussed above, SNFs are under significant pressure to conform to a rapidly evolving service delivery system which, in my opinion, is resulting in higher acuity patients despite Acumen's research.

Recommendations

- **Acumen should factor modernization of health care delivery (both within SNFs and in health systems) into the impact analysis.**
- **Health Information Technology (HIT) must be included in any non-case mix component redesign.**
- **Acumen also should consider demand for services based upon demographic trends and projected demand for services.**
- **Compliance with new CMS and state regulatory requirements also must be considered.**

1. Age of Buildings and Modernization

Changes in acuity require more modern facilities at time when many SNF buildings are 30-50 years old. Additionally, today's patients have very different expectations of where and how they receive care. Already, I have discussed person-centered care delivery and the Artifacts of Culture Change. To embrace the Artifacts and update care delivery settings, significant investment and outgoing, supporting revenue is needed.

2. Health Information Technology

Payment system modernization is dependent upon more sophisticated HIT for payment as well as outcome measurement which also might impact payment. And, long-term and post-acute care providers were not included in the Health Information Technology for Economic and Clinical (HITECH) Act meaningful use funding opportunities. The SNF profession has struggled to keep pace with CMS and market driven payment and quality outcome measurement initiatives which require sophisticated HIT. In fact, CMS notes this issue in its Episode Payment Models Proposed Regulation. Specifically, CMS points to research which notes that "a recent national survey of IT in nursing homes showed common use for administrative activities but less use for clinical care." [30][31] Such HIT would be needed to track clinical data for purposes of resident groupings.

3. Demographics and Out-year Demand

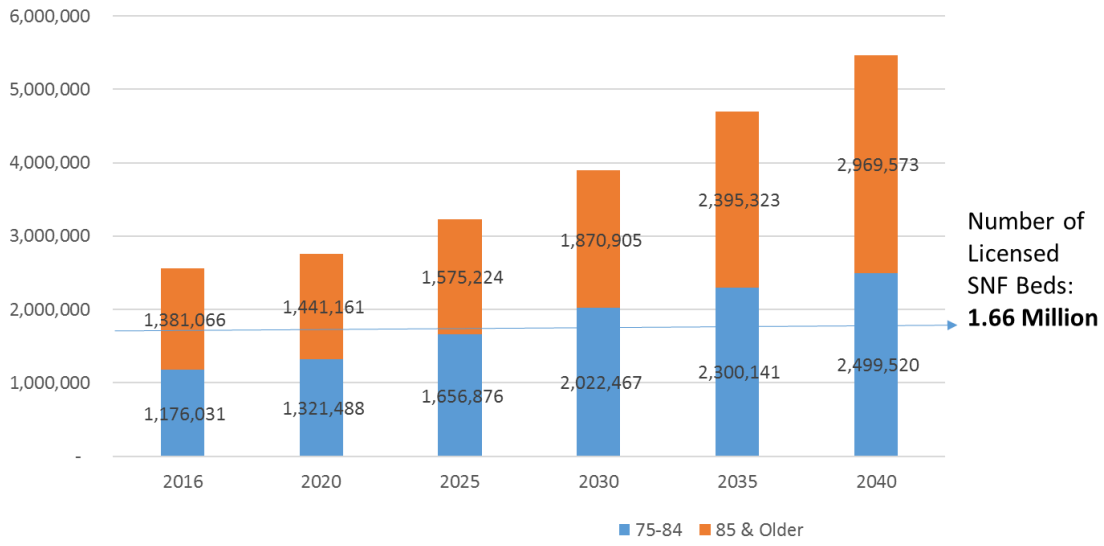
Furthermore, while I am well aware of medical advances, payment and service delivery system trends which likely will reduce demand for SNF-based care, I still would point out the demographic trends any

[30] 81 Fed. Reg. 42, 148; 50812

[31] Alexander Gregory, L. "An Analysis of Nursing Home Quality Measures and Staffing." Quality Management in Health Care. 17.3 (2008): 242-251. PMC. Web. 16 July 2016.

health policy or payment effort should consider. In Chart 4D-1, I offer a basic overview of the number of people age 75-84 and 85 and older compared to the number of licensed beds, nationally. These are the age cohorts most likely to experiences short or long term deficits in ADLs and IADLs which might require post-acute or long-term care.

Chart 4D-1. Demographic Trends Compared to Licensed Beds in U.S.



Source: AHCA Research Department analysis of U.S. Census Bureau data

In no way am I attempting to make an estimate of demand based upon a static snapshot when a microsimulation model would be needed to better understand demand. However, I do believe this basic overview is worth considering when designing the impact analysis for any new SNF payment system. SNFs provide more than professional care during a stay; they also provide housing and appropriate facilities for certain types of clinical care most safely delivered in a medical setting.

4. CMS and State Regulatory Requirements Must Be Considered.

In the past two years, CMS and the states have released an array or new SNF operating requirements. These range from the RoPs noted earlier to new state minimum wage laws. These requirements to participate in the Medicare and Medicaid programs must be considered when redesigning reimbursement for operations and ongoing maintenance. Table 4D-1, below, provides an overview.

Table 4D-1. SNF Policy Changes Currently Not Included in Acumen Analysis

Current and Future Changes	Key Highlights
Focused Surveys	
MDS focused surveys	• Focus on MDS accuracy and frequency • Posting and archiving of daily staffing
Dementia Focused Surveys	• Staff training and demonstrated competency in dementia care
Adverse events focused on surveys	• Focus on medication errors • How SNFs investigate adverse event
Requirements of Participation	• Proposes extensive changes estimated by CMS to cost the SNF profession an additional $684 million-plus in annual operating expenses
New Life Safety Codes	• Updates Life Safety Codes to national 2012 life safety codes • Increases inspection, testing and maintenance requirements • Additional sprinkler system requirements
New Emergency Preparedness Requirements for all Provider Types	Extensive rewrite with all hazard approach; with cost implications to comply, need to have: • Plan and tested plan for different types of emergencies and must meet the needs of the type of residents served • Test generator on load 1x year for 4 hours • Training upon hire and annually
Discharge Planning for Hospitals and Home Health	Proposed Rule issued November 2016; impacts SNFs: • Requires hospitals to give patients info on SNF quality prior to discharge and advice on SNF selection • SNFs in managed care network
OSHA Electronic Reporting of Illnesses and Injuries	• Database of electronic reporting info will be made available to public
Department of Labor Rules on exempt and non-exempt employment	Defining and Delimiting the exemption for executive, administrative, professional, outside sales, and computer employees (RIN 1235-AA11) with key proposed changes: • Setting minimum salary levels and hourly rates and overtime requirements and annual inflator; and • Changes criteria about exempt compensated employees
States	
State and Municipal Minimum Wage Laws	Approximately a dozen states have enacted or are developing minimum wage laws as well as an array of municipalities
Quality Measure & Reporting	
IMPACT Act	Changes to MDS – 2016 SNF PPS rule added new section GG to MDS and changes to MDS discharge assessments. Need to complete when discharged from Part A coverage. Three finalized measures and four proposed.
Changes to Five Star	• Added new measures – rehospitalization, discharge to community, mobility in room, change in ADL from admission • Rebase the QM thresholds to achieve each Star level
Payroll Based Journal	• Requires quarterly submission of staffing from payroll and all contract and agency use collected and reported by employee name
Payment to SNFs	
SNF VBP	• 2% with-hold linked to rehospitalizations
IMPACT Act Failure to Report Penalty	• Beginning in 2016 for finalized the three finalized measures, IMPACT Act measures, SNFs that fail to report on quality measures and resource use and other measures will be subject to a two percentage point reduction in market basket prices in effect under the existing

Current and Future Changes	Key Highlights
	payment methodology in the Social Security Act. • Also will require fundamental changes in SNF operations focusing on quality outcomes.
Alternative Payment Methods	
CMMI demonstrations including BPCI, CJR and ACOs	• These demonstrations include extensive work on condition categories and patient characteristics. All of this could be leveraged to enhance the Acumen project.

In Attachment D, I offer an overview of reductions in SNF reimbursement irrespective of PPS but which should be accounted for in a PPS redesign approach.

Section 5. Payment Methods

In the TEP presentations, Acumen walked through a series of per-diem payment models arrayed as blocks of days with decreasing payment rates. As discussed above, I have concerns regarding whether such a payment structure is permissible under current statute. Based on my observations above, I am concerned about how blocking and frontloading will support patients' needs. I also am concerned about the complexity of such a system.

Recommendations

- **Acumen further should investigate whether CMS has the statutory authority for frontloaded payments.**
- **Based upon AHCA analysis, Acumen should investigate how such a payment system would accommodate needs which, with current data, are not predictable.**
- **Acumen should clarify how payment aligns across components. Specifically, whether each component should have its own blocking and frontloading pattern or whether the payment would be designed around the person.**

1. Challenges with Proposal

First, Acumen did not specify a number of critical decision points in this part of the policy. Acumen did not specify how the relative payment rates would be set for the blocks of days across the stay. This rate setting approach is important to specify because it impacts the providers in care delivery. More pointedly, access issues should be carefully assessed. Additionally, it is important for Acumen to understand the mechanism of these payment incentives. If payments for patients do not cover costs of their care, accepting such patients represents quality issues and could result in cherry picking (e.g., providers might have an incentive to avoid certain types of patients). While Acumen has stated consideration of other payment and delivery systems is outside its scope, such patient cherry picking would vary significantly based upon Medicare Advantage penetration rates and related payment as well as other factors which drive up SNF operating costs and negatively impact their ability to meet the needs of a wide variety of patients. For example, in the Acumen slides, the concepts presented appear to be based on pure statistical analysis with little consideration for how the payment approach would function in a real world operating environment. Acumen should develop the policy so that the financial incentives for SNFs are neutral across patient groups and through the stay.

Second, as discussed previously, if the clinical groupings do not adjust for important patient characteristics, then certain patients will represent a negative financial effect on SNFs and therefore may be avoided. Similarly, if payments through the stay do not cover the clinically-optimal resources provided across the length of stay, then to ensure business viability the SNF might either diminish the care being provided below the clinical optimum, or cut the length of stay below the clinical optimum.

Third, Acumen should revisit its resident groupings. It is very important that the relative payment rates through the stay are set to be neutral to the resource utilization through the stay. It also is important that Acumen calibrate the relative national payment rates through the stay for the therapy components based on the therapy minutes reported on the MDS. This will ensure payment neutrality to the care needs of the patients, without incentives to inappropriately decrease length of stay below clinically appropriate levels.

Third, it remains unclear if patients will be able to change resident groupings. This point is moot if the patient categories are not improved, as they are not sufficiently granular to detect most patient status changes. If, however, the patient categorization is fixed, under a significant patient state change, Acumen would need to decide whether the patient's payment sequence stays on its previous "track", whether it switches to the new track but continues as though the patient had been in that patient group from the start of their stay, whether the patient's payment sequence would re-start as if it was a new admission, or whether a separate payment sequence is calibrated for patients who have changed status. For the same reasons outlined above, this decision point would determine whether significant patient access problems are created or not.

2. Recommendation

Acumen should consider forming an ad hoc work group with TEP participants and research firms with in depth post-acute payment expertise to aid in the development of the payment approach. My organization, AHCA, would be pleased to work with Acumen to provide assistance and ongoing advice.

Attachment A

Moran CCR Research

Memorandum (July 10, 2015)

To: **Mike Cheek, AHCA**

From: **Rachel Feldman, Parinaz Ghaswalla and TMC Team**

Subject: **Task Order 36, Evaluation of Nursing Routine Costs on SNF Cost Reports**

The Moran Company (TMC) memorandum dated June 24, 2015, provided an evaluation of the variability of ancillary and therapy cost and charges on SNF claims and cost reports in 2013. As part of the same scope of work, TMC also conducted an evaluation of nursing routine costs on SNF cost reports in 2013.

Nursing routine costs were estimated as the sum of net expenses and employee benefit costs from worksheet B of SNF cost reports. These costs include routine inpatient costs for Medicare and non-Medicare beneficiaries. To normalize nursing costs, we computed the nursing routine cost per day. The total day count includes covered as well as non-covered days. We also examined the completeness and variability of nursing routine costs and salaries on cost reports. This memorandum presents the results from our analysis of nursing routine costs on 2013 SNF cost reports. This analysis had as its focus the quality and consistency of cost report data. Further investigation of routine nursing costs would need to be done removing the geographic variation in wages. However, the outliers at 2-3 standard deviations from the mean are not likely due to geographic factors.

Key Findings

- The average nursing routine cost for the 9,856 SNFs included in this analysis was $86.29 (SD=$37.98).
    - Average nursing routine costs increases with facility volume ($75.70 for very small volume facilities vs. $103.34 for large volume facilities). Facility volume was defined based on the volume of Medicare covered days (Table 1).
    - About 2% and 1% of all facilities had average nursing routine costs that were +/-2SDs and +/-3SDs from the mean, respectively (Table 1).

- Overall, only about 1% of facilities did not report nursing routine costs on cost reports.

- Higher volume facilities were more likely to report nursing routine costs as compared to lower volume facilities (Table 2).

- Overall, about 7% of all facilities did not report employee benefits on worksheet B, and about 2% of all facilities did not report salaries on worksheet A. There was no trend observed for the reporting of employee benefits and salaries based on facility volume (Table 2).

- The facility-level distributions of average nursing routine costs overall for all SNFs, and by facility volume are shown in Figures 1-5.

Table 1: Average Nursing Routine Costs in 2013, by Facility Volume

Facility Volume	Number of Facilities	% of total	Nursing Routine Cost per Day	Standard Deviations (SD) for Nursing Routine Cost per Day	Facilities with Average Routine Cost +/- 2SDs from the Mean	% of total	Facilities with Average Routine Cost +/- 3SDs from the Mean	% of total
Total	*9,856*	*100%*	*$ 86.29*	*$ 37.98*	*183*	*2%*	*76*	*1%*
Very Small (<1,500 covered days)	1,715	17%	$ 75.70	$ 59.75	21	*1%*	11	1%
Small (1,500-3,614 covered days)	3,219	33%	$ 79.62	$ 29.81	105	*3%*	44	1%
Medium (3,615-9,999 covered days)	4,064	41%	$ 87.19	$ 31.75	105	*3%*	35	1%
High (≥ 10,000 covered days)	858	9%	$ 103.34	$ 31.26	30	*3%*	9	1%

Table 2: Check for Completeness of Reporting of Routine Nursing Cost and Salaries on SNF Cost Reports in 2013.

Facility Volume	Number of Facilities	% of total	Facilities that did not report Routine Cost on worksheet B	% of total	Facilities that did not report Employee Benefits on worksheet B	% of total	Facilities that did not report Salaries on worksheet A	% of total
Total	*9,856*	*100%*	*127*	*1%*	*649*	*7%*	*245*	*2%*
Very Small (<1,500 covered days)	1,715	17%	85	5%	145	8%	91	5%
Small (1,500-3,614 covered days)	3,219	33%	33	1%	183	6%	56	2%
Medium (3,615-9,999 covered days)	4,064	41%	9	0%	250	6%	69	2%
High (≥ 10,000 covered days)	858	9%	-		71	8%	29	3%

Figure 1: Distribution of Average Nursing Routine Costs for all Selected SNFs, as Reported on CY 2013 SNF Cost Reports

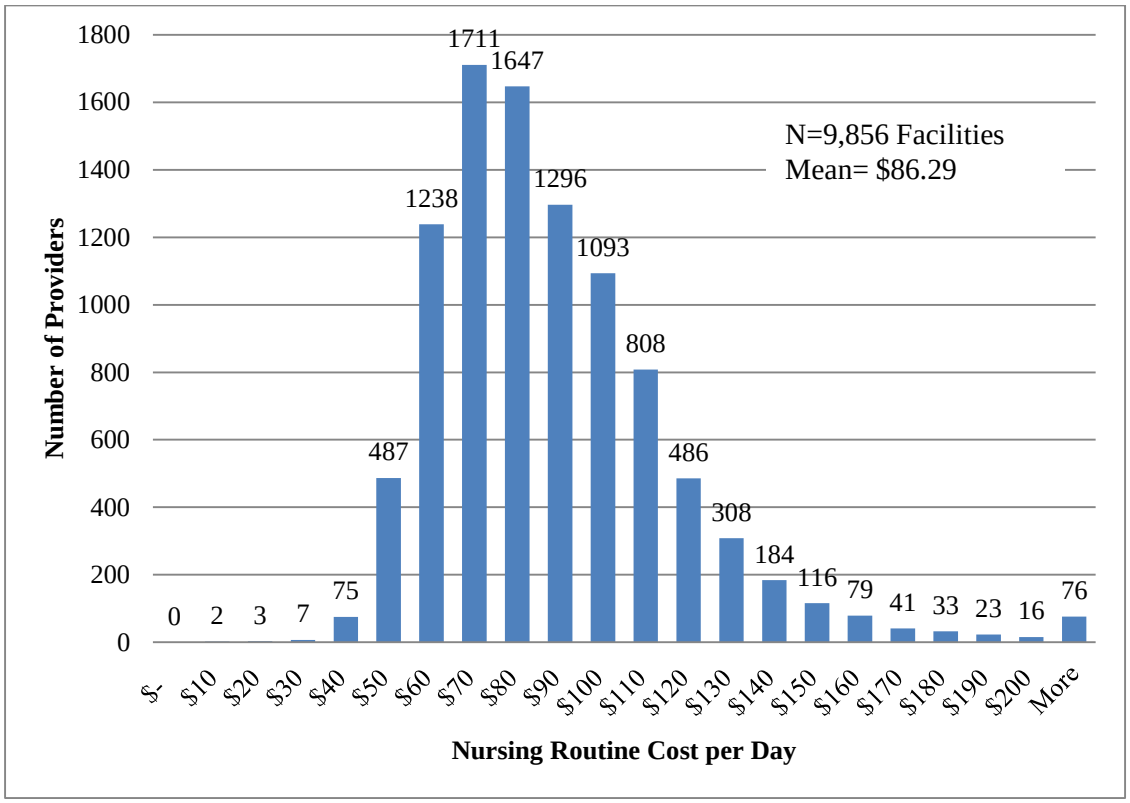


Figure 2: Distribution of Average Nursing Routine Costs in Very Small Volume Providers as Reported on CY 2013 SNF Cost Reports

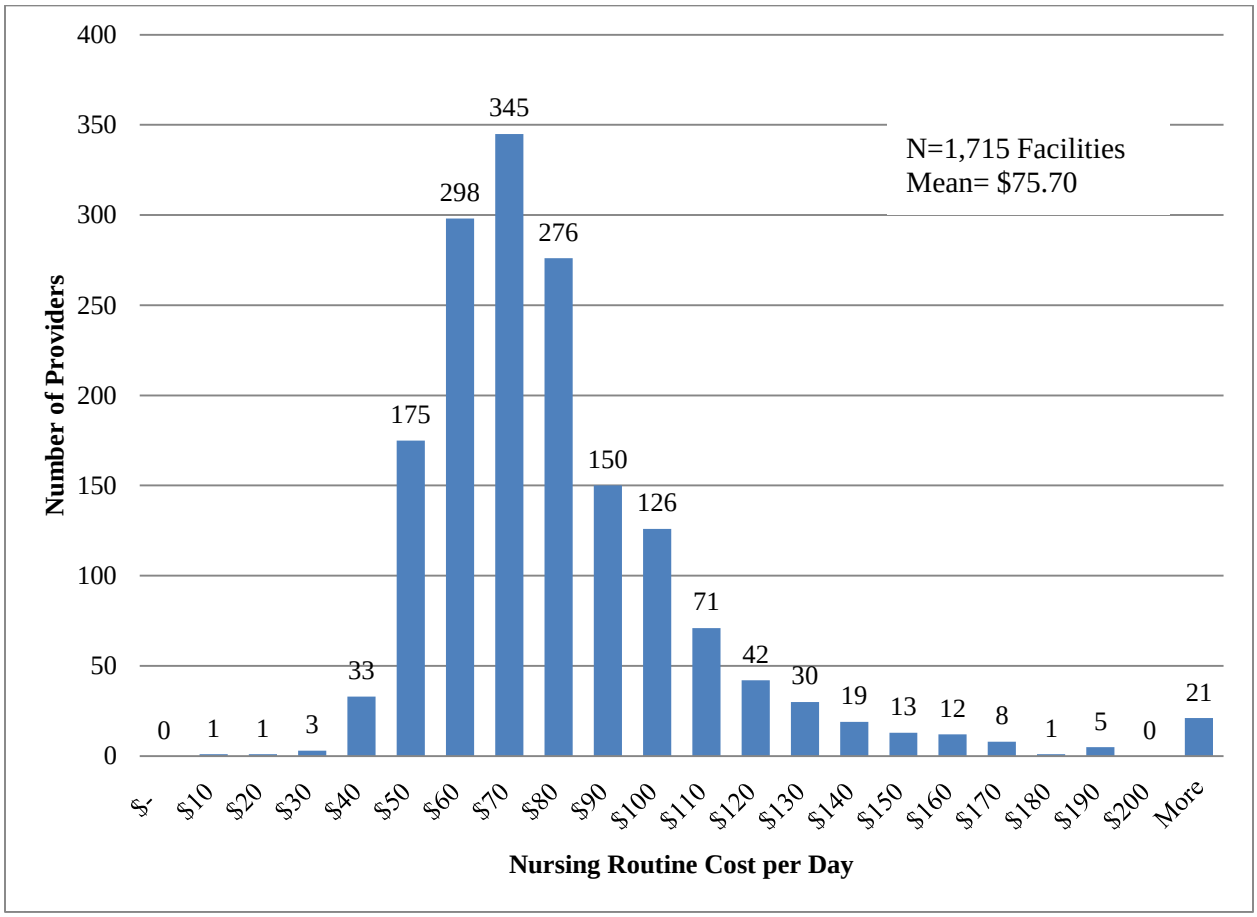


Figure 3: Distribution of Average Nursing Routine Costs in Small Volume Providers as Reported on CY 2013 SNF Cost Reports

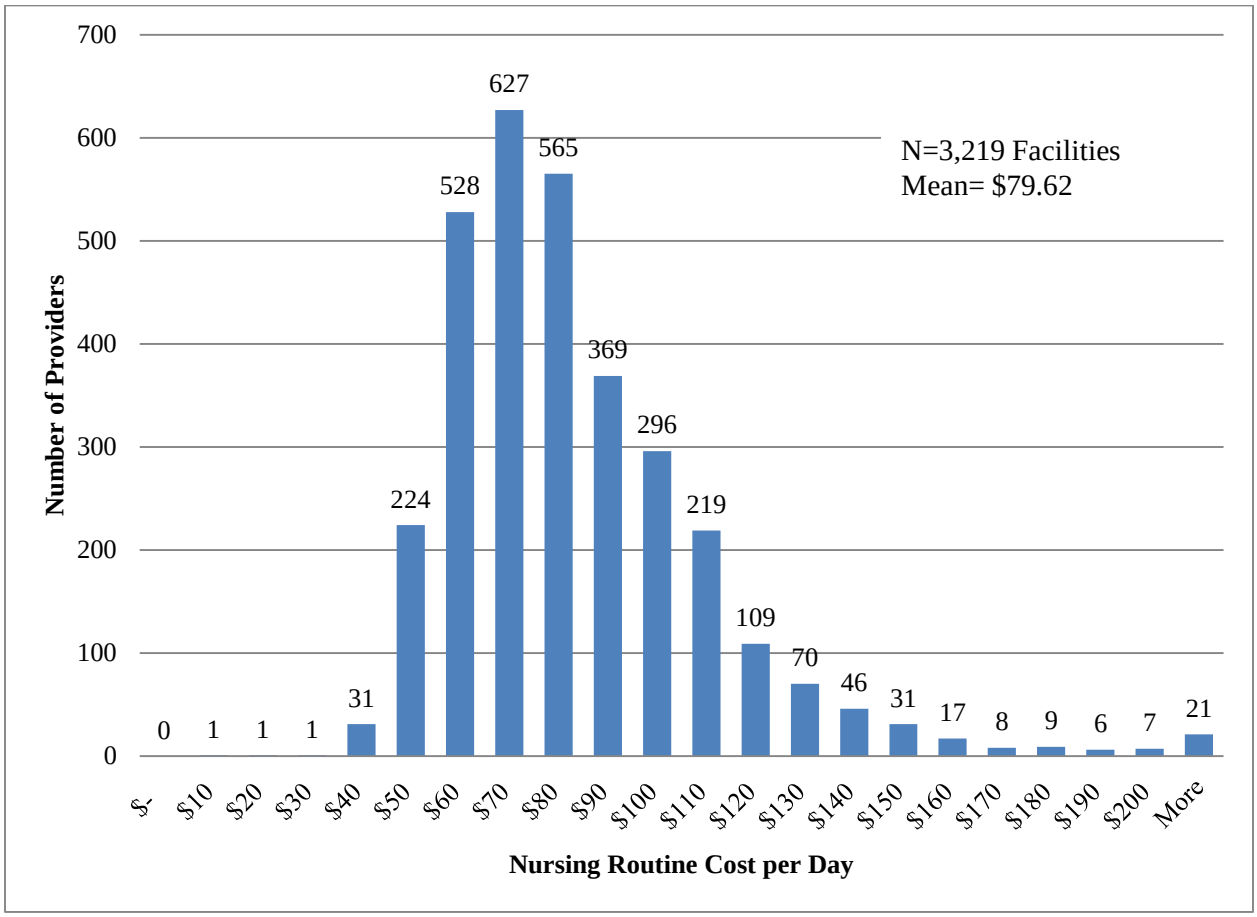


Figure 4: Distribution of Average Nursing Routine Costs in Medium Volume Providers as Reported on CY 2013 SNF Cost Reports

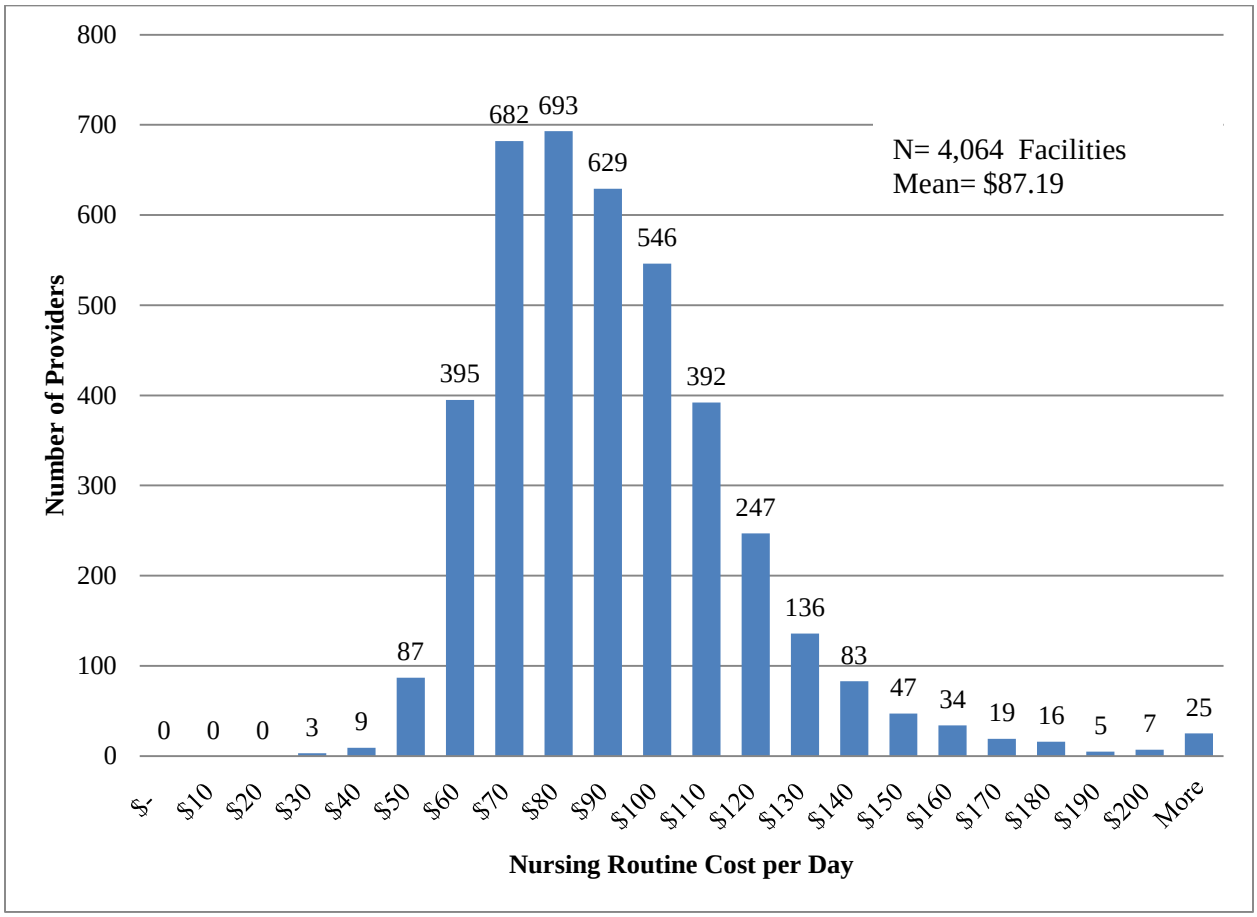
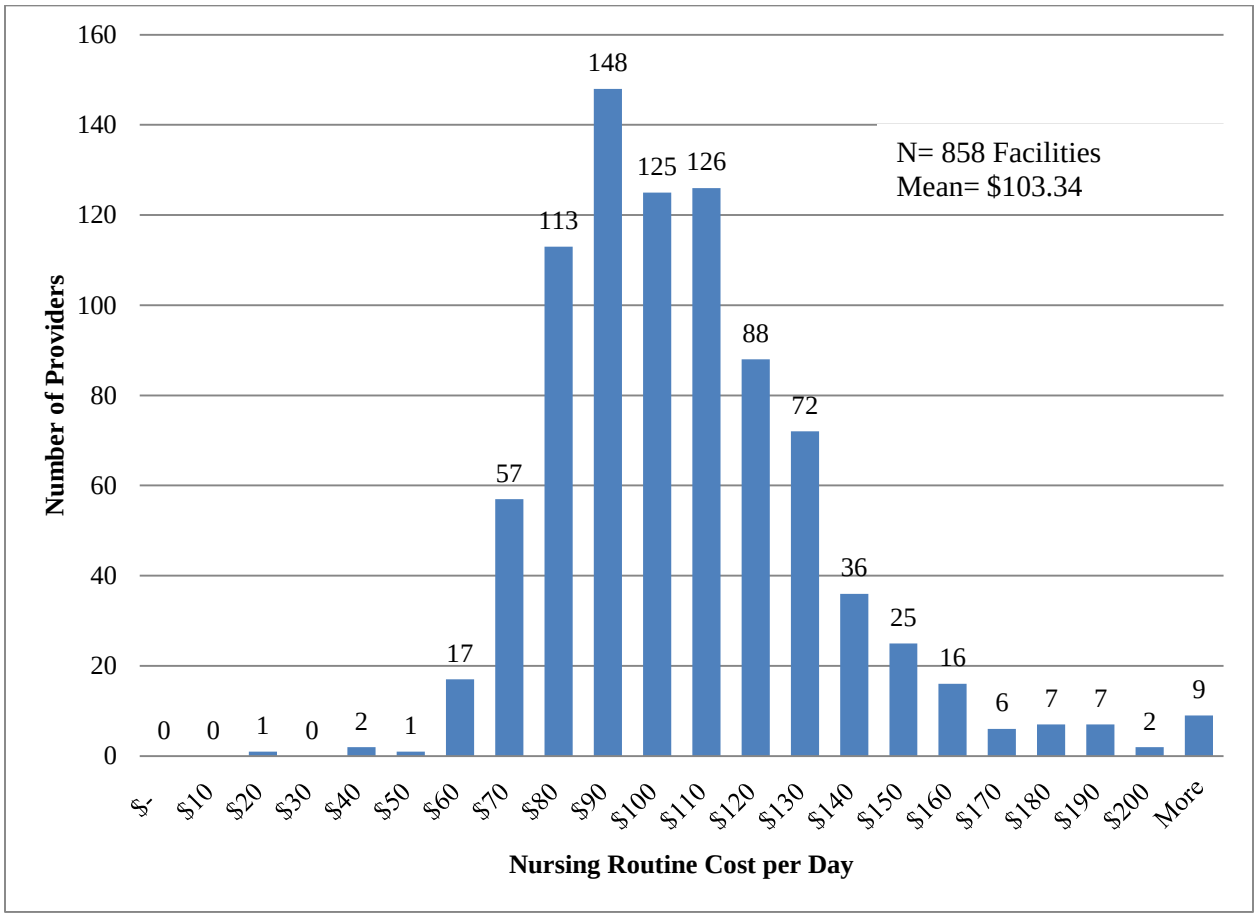


Figure 5: Distribution of Average Nursing Routine Costs in High Volume Providers as Reported on CY 2013 SNF Cost Reports



Technical Appendix: Methodology

In the technical appendix of the memo dated June 24, 2015, we explained the selection criteria for the inclusion of SNFs for the analysis of ancillary and nursing cost and charges. For this analysis of nursing routine costs, we analyzed 2013 cost report data for the same 9,856 SNFs.

SNFs were classified into the following four categories based on their volume of Medicare covered days:

- Very-small volume (<1,500 days)
- Small volume (1,500-3,614 days)
- Medium volume (3,615-9,999 days)
- High volume (≥10,000 days)

The following data were extracted from CY 2013 cost reports for the selected SNFs:

- WORKSHEET S-3, Part 1- Statistical Data
    - Line 1, Column 7- total inpatients days for SNFs
    - Line 2, Column 7- total inpatient days for NFs

- WORKSHEET A, Reclassification and Adjustment of Trial Balance of Expenses
    - Line 30 (Skilled Nursing Facility), Column 1 (Salaries)
    - Line 31 (Nursing Facilities), Column 1 (Salaries)

- WORKSHEET B, Cost Allocation- General Service Costs
    - Line 30 (SNFs), Column 1 (Net Expenses)
    - Line 30 (SNFs), Column 3 (Employee Benefits)
    - Line 31 (NFs), Column 1 (Net Expenses)
    - Line 31 (NFs), Column 3 (Employee Benefits)

Memorandum (June 24, 2015)

To: **Mike Cheek, AHCA**

From: **Rachel Feldman, Parinaz Ghaswalla and TMC Team**

Subject: **Task Order 36, Evaluation of the Consistency, Variability and Completeness of SNF Claims and Cost Report Data on Ancillary Services**

The American Health Care Association (AHCA) commissioned The Moran Company (TMC) to examine and evaluate the consistency and quality of Medicare Part A claims and cost report data for ancillary services for skilled nursing facilities (SNFs). AHCA is concerned about the viability of research conducted by the Centers for Medicare & Medicaid Services (CMS) and encouraged by the Medicare Payment Advisory Commission (MedPAC) designed to make changes to the SNF prospective payment system (PPS) regulations. Specifically, MedPAC has suggested that data on charges in claims and cost-to-charge ratios from cost reports be used to better pay for non-therapy ancillary services (NTAS). AHCA is concerned that the quality and reliability of these data are insufficient for targeting payment.

The work undertaken by TMC was designed to independently evaluate the extent to which these data are appropriate for use in rate setting. This memorandum describes the evaluation performed by TMC and its results based on examination of calendar year (CY) 2013 Standard Analytic Files (SAFs) and cost reports. TMC examined data for NTAS as well as the three therapy disciplines. This memo presents results for both analyses separately, first looking at NTAS, and then in Part 2, looking at the therapy disciplines.

Background

The SNF per diem payment has three major components: a nursing component, a therapy component, and a non-case mix component for room and board, linens, and administrative services. The two major and persistent limitations asserted by MedPAC and CMS for the SNF PPS include: (1) it does not accurately pay for non-therapy ancillary services (NTAS), and (2) it incentivizes facilities to provide therapy services that may not be clinically justifiable. NTAS, such as drugs, intravenous therapy and respiratory services, are embedded within the rate for the nursing component, even though researchers assert that NTAS costs vary much more than nursing care costs and are not correlated with them. Because of this, researchers assert that providers with patients with high NTAS costs do not receive proportionally higher payments.[1]

[1]MedPAC January 2015 Report: The Need to Reform Medicare's Payments to Skilled Nursing Facilities is as Strong as Ever. http://www.medpac.gov/documents/reports/january-2015-medpac-and-urban-institute-report-the-need-to-reform-medicare-s-payments-to-skilled-nursing-facilities-is-as-strong-as-ever.pdf

MedPAC argues that the current SNF PPS is overpaying for therapy and underpaying for patients with high NTAS. To address these limitations, CMS, MedPAC and their respective contractors have utilized Medicare SNF cost report data, claims data, and SNF Minimum Data Set (MDS) Resident Assessment Instrument (RAI) data as a basis for examining, evaluating, and refining the SNF PPS. In the absence of other more robust data, these databases currently provide the only means for examining Medicare Part A costs and modeling cost drivers for the SNF PPS overall and for NTAS in particular. For example, regression models to identify patient characteristics and services that drive NTAS costs use data on charges from Medicare Part A claims and cost-to-charge information available in SNF cost reports.

AHCA's hypothesis is that the charges in SNF claims are seldom used for payment, and may therefore be incomplete, inaccurate, and inconsistent. The cost-to-charge data in cost reports are not allocated for Medicare patients and represent cost data for all patients and charge data from all claims. Therefore the TMC research tests the hypothesis that the available data underlying the current methodologies to reform the SNF PPS have considerable flaws.

After presenting a summary of key findings and discussing results, separately for NTAS cost and charges and therapy services cost and charges, a detailed technical methodology section provides information on how the analyses discussed in this memo were developed. A series of appendices provide the detailed data underlying the findings discussed in the body of this memo.

Part 1: Evaluation of NTAS Cost and Charge Data on Claims and Cost Reports

On worksheet C of the cost reports, providers may report cost, charges and cost-to-charge ratios for ancillary service cost centers. We extracted data for the following seven ancillary service cost centers that are NTAS under the SNF PPS:

- Radiology
- Laboratory
- Intravenous Therapy
- Oxygen (Inhalation) Therapy
- Electrocardiology
- Medical Supplies
- Drugs

Key Findings

Analytic Results

- A total of 9,856 SNF providers were selected from 2013 SNF claims data because they submitted a complete year of cost report data for CY 2013.
    - About 1.2% of these providers who submitted CY 2013 cost report data did not report any cost and charges data (worksheet C) and/or Medicare covered day information (worksheet S-3).
    - The remaining 9,737 providers were selected for further analysis.
    - Of these 9,737 providers, about 2.5% of the providers had more than a 10% difference between total Medicare covered days on claims and cost reports for the same period.

- In examining the proportion of SNF claims reporting NTAS revenue centers codes and charges, we found that of the total 3,492,872 SNF claims in 2013:
    - Drug revenue codes and charges were not reported for 10% of the claims,
    - Medical supplies revenue codes and charges were not reported for 72% of the claims, and
    - Other NTAS (radiology, oxygen therapy, IV therapy and/or electrocardiology) revenue codes and charges were not reported for 78% of the claims.

- As a check for ***completeness*** of data on NTAS charges at the provider level, we report the number of SNF providers who reported ancillary cost center charges on claims but not on cost reports.
    - For NTAS such as intravenous (IV) therapy, inhalation therapy and electrocardiology, cost report data were missing charges for some providers (see Table 1).
    - Incomplete charges on cost reports would result in incorrect CCRs for some of these NTAS categories.

Table 1: Check for *Completeness* of NTAS Charges for CY 2013 Claims and Cost Report Data

Non-Therapy Ancillary Service (NTAS) Cost Center	Number of Providers Reporting NTAS Charges on Claims	SNF providers with NTAS **charges reported on claims but not on cost reports**	% of total
Drugs	9,650	93	1.0%
Laboratory	8,891	194	2.2%
Radiology	8,257	229	2.8%
Medical Supplies	6,833	307	4.5%
Intravenous Therapy	3,191	769	24.1%
Oxygen (Inhalation) Therapy	2,204	422	19.1%
Electrocardiology	626	413	66.0%

- As a check for *reliability* of data on NTAS charges at the provider level, we compared total charges on cost reports and Medicare charges on claims. Because cost report data include charges for non-Medicare patients, total charges on cost reports should be equal to or greater than charges reported on claims.
    - The percentage of providers who reported total charges on cost reports that are lower than Medicare charges on claims was in the range of 3-10%, depending on the NTAS cost center (See Table 2).

Table 2: Check for *Reliability* of NTAS Charges for CY 2013 Claims and Cost Report Data

Non-Therapy Ancillary Service Cost Center	Number of Providers Reporting Charges on Claims and Cost Reports	SNF providers reporting **total charges on cost reports that are lower than Medicare charges** on claims	% of total
Drugs	9,557	387	4.0%
Laboratory	8,697	370	4.3%
Radiology	8,028	291	3.6%
Medical Supplies	6,526	207	3.2%
Intravenous Therapy	2,422	84	3.5%
Oxygen (Inhalation) Therapy	1,782	52	2.9%
Electrocardiology	213	21	9.9%

- As a check for the *reliability* of NTAS cost and charges data on cost reports at the provider level, we report the number of providers with CCR > 1 for each of the seven NTAS cost centers. When providers report a CCR > 1, their charges are lower than costs. This finding suggests unreliable charge information.
    - For all NTAS cost centers, more than 40% of providers reported CCR >1 (See Table 3). Additionally, the estimated CCR for all NTAS categories was greater than 1 for 37% of the providers.

Table 3: Check for *Reliability* of NTAS Cost Center Cost-to-Charge Ratio for CY 2013 Claims and Cost Report Data

Non-Therapy Ancillary Service Cost Center	Number of Providers Reporting CCRs on Cost Reports	SNF providers with ancillary cost center **CCR >1**	% of total
Drugs	9,567	3,603	37.7%
Laboratory	8,980	3,607	40.2%
Radiology	8,495	3,645	42.9%
Medical Supplies	7,360	3,507	47.6%
Intravenous Therapy	3,005	1,275	42.4%
Oxygen (Inhalation) Therapy	2,958	1,374	46.5%
Electrocardiology	235	78	33.2%

- To determine the *variability* of NTAS cost center CCRs on cost report data, Appendix A (Figures 1-7) shows the distribution of provider level CCRs for each of the seven NTAS cost centers, and the distribution for the estimated CCR for all NTAS categories combined.

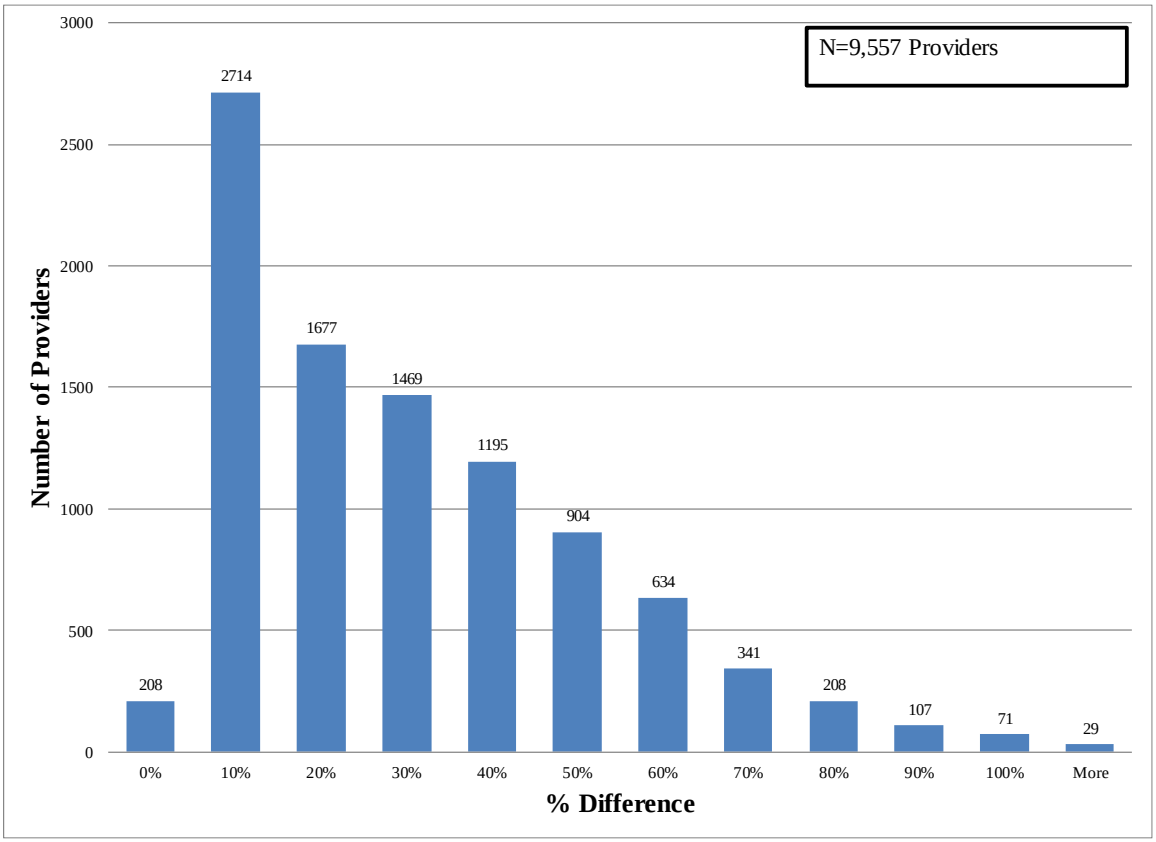
  - The lack of consistency of CCRs is demonstrated by the bi-model distributions and the wide range of CCR by facility. For example, some providers reported CCR > 2 for the NTAS cost centers.

- The ***variability*** of NTAS charges on claims data were examined using histograms for Medicare charge per covered day for each of the seven NTAS categories, and a charge per day for all NTAS categories combined, at the provider level.
  - The provider level variability in Medicare charge per day is demonstrated by the long tails (See Appendix B, Figures 8-14).

- For drug charges, we computed Medicare charges from cost reports using an assumption that 98% of drug charges on cost reports would reflect charges for Medicare patients[2].
  - The percentage difference between drug charge per day on cost reports and claims for Medicare patients is greater than 50% for about 25% of the providers (See Figure 15).

[2] This assumption is based on drugs being billed separately to payers or patients outside the Part A SNF requirements.

Figure 15: Distribution of % Difference in Medicare Drug Charge per Day Estimated from Cost Reports and Drug Charge per Day from Claims



- To check for any trends by facility volume, we created histograms to show the number of providers with CCR > 1 by four levels of facility volume: very small (<1,500 covered days), small (1,500-3,614 covered days), medium (3,615-9,999 covered days) and high-volume (>= 10,000 covered days) facilities. (See Technical Appendix for methodology used to choose cut-points).
    - A greater percentage of very small (42%) and small (38%) volume providers had estimated CCR for all NTAS greater than 1 as compared to medium (36%) and high-volume (32%) providers (See Appendix C, Figures 16-19).

Policy Implications

The combination of missing, inconsistent, unbelievable (CCRs>1), and variable data for NTAS represented in the charges associated with revenue centers on claims and in cost reports suggests flaws that will frustrate the policy objective of accurately targeting patients with high cost NTAS. While statistical modeling may suggest these data can explain variation in cost, the variation that is being explained may not be real. Some providers may deliver high cost NTAS

and not record charges; charges may not be updated; charges may be incomplete. When charges are seldom if ever used in payment, they may not be kept up to date, or adjusted when services change or new services are introduced.

The requirement to report charges on claims aggregated by revenue center instead of use of HCPCS codes (as used when available in hospital payment systems) makes tracking these charges to actual NTAS utilization impossible. Further, the lack of specific information on NTAS combined with the standard Medicare policy of not providing direction to providers on the reporting of charges, mean:

1. That there is no way to audit for the actual provision of NTAS; and
2. Any policy that relies upon charges on claims will be open to potential manipulation.

SNF cost report data does not make any allocation of cost or charges to Medicare fee-for-service. The data reported are for all payers and for both SNF and nursing facility services. Discrepancies in the reporting of basic Medicare information such as covered days where claims and cost report data are for the same time period, along with other flaws identified, indicate that cost to charge ratios constructed from these data are not meaningful as a tool to reduce charges to cost in this payment system. The preponderance of ancillary cost to charge ratios that are greater than one represent charges that are lower than cost: a representation of facility economics that is unbelievable from a business point of view.

We also do not believe that the MDS variables are sufficient to target high NTAS. Indicators such as the patient needing IV therapy may be associated with low cost antibiotics and saline, and not with high cost drugs. Further, many oral drugs are more expensive than IV drugs. Finally, drug cost for this population may be best represented by the aggregation of cost across the multiple drugs that most patients take. Analysis of SNF pharmacy data, which are not publicly available, could provide a better basis for understanding the range and distribution of drug costs that need to be taken into account to appropriately design an NTAS payment policy.

If revision of the SNF PPS is going to target more appropriate payment for NTAS, then CMS could introduce new reporting requirements in claims to better identify the NTAS of interest. If such data were collected for two years, it would begin to provide the information needed to achieve the desired purpose. Use of existing data to target NTAS will produce payment variation based on that data, but based on the TMC analysis of these data, the payment variation that results may not accurately pay for services that are actually delivered.

Part 2: Evaluation of Therapy Cost and Charge Data on Claims and Cost Reports

In addition to the evaluation of the quality of NTAS cost and charge data, we also examined charges for therapy services on claims and cost reports. It is not possible to differentiate between charges for the three therapy disciplines on claims data. On the cost reports, cost, charges, and CCRs are reported separately for physical therapy (PT), occupational therapy (OT) and speech-language pathology (SLP).

To compare the quality of cost and charges data for therapy, we estimated therapy costs using claims data and used this to compute facility-level therapy CCRs from claims data. We imputed a $1/minute estimate for cost for therapy and assumed that the bottom of the RUG range for minutes characterized the cost. If variation in actual cost per minute is mostly above $1/minute and variation in actual minutes is above the threshold to qualify for the RUG billed, then the CCRs estimated for therapy from claims data will approach the CCRs observed in claims (see Technical Appendix for detailed methodology).

Key Findings

- The same 9,737 providers selected for the NTAS analysis, were included for the analysis of therapy charges.
    - About 1% of these providers did not report any therapy charges (physical therapy, occupational therapy or speech-language pathology) on either claims or cost reports.

- Of the total 3,942,872 SNF claims examined in 2013:
    - About 6% of the claims did not have any days of therapy reported (PT, OT or SLP)
    - About 2% of the claims with at least one day of a rehabilitation RUG did not report any therapy charges under revenue center charges on the revenue center file.

- To check for the ***reliability*** of therapy CCR reported on cost reports, we compared cost report therapy CCR with therapy CCR estimated from claims data at the provider level (See Figure 20).
    - The variation in the percentage difference in cost report therapy CCR and therapy CCR estimate from claims is shown in Figure 21.
    - A majority of the providers had more than a 50% difference in therapy CCR from cost reports and claims.

Figure 20: Distribution of Cost Report Therapy CCR and Therapy CCR Estimated from Claims

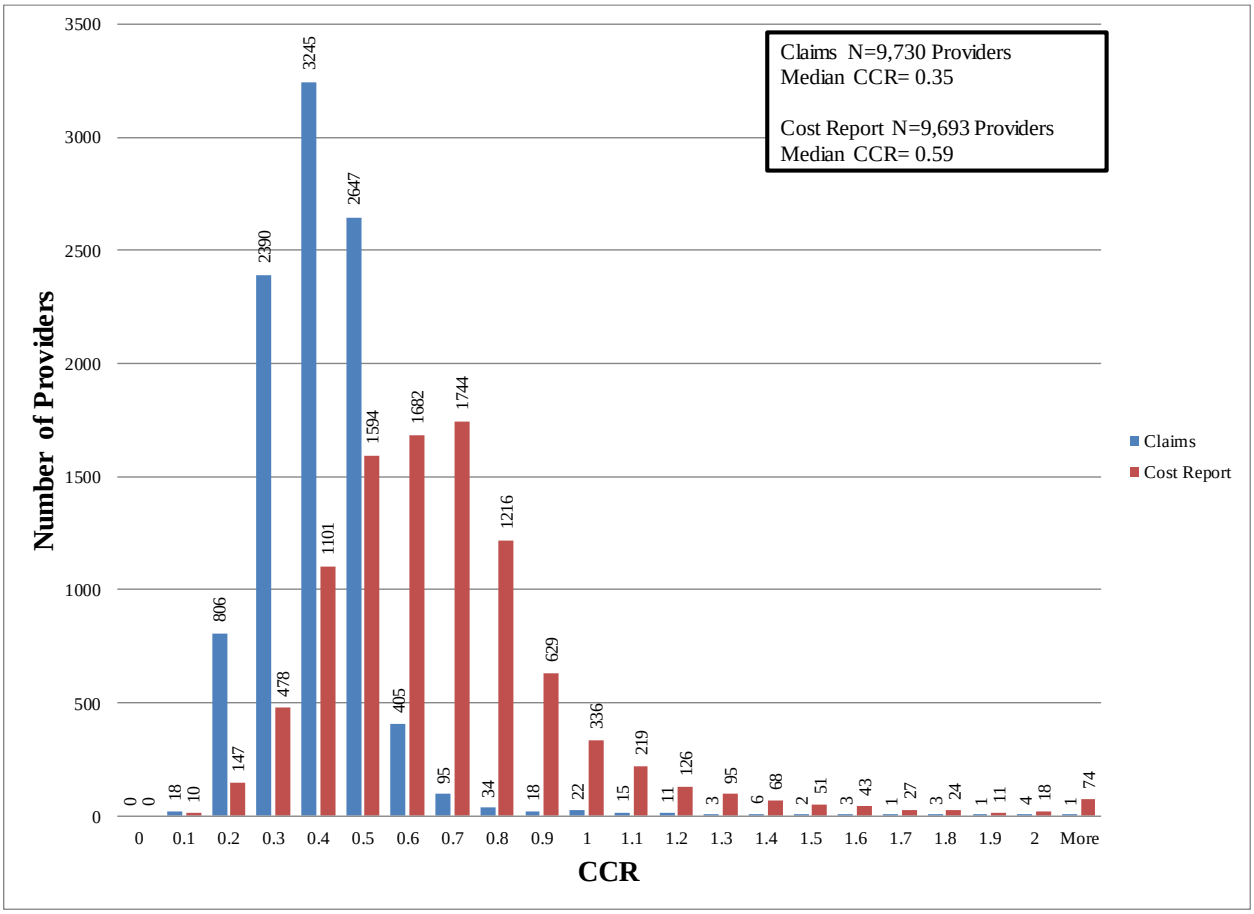
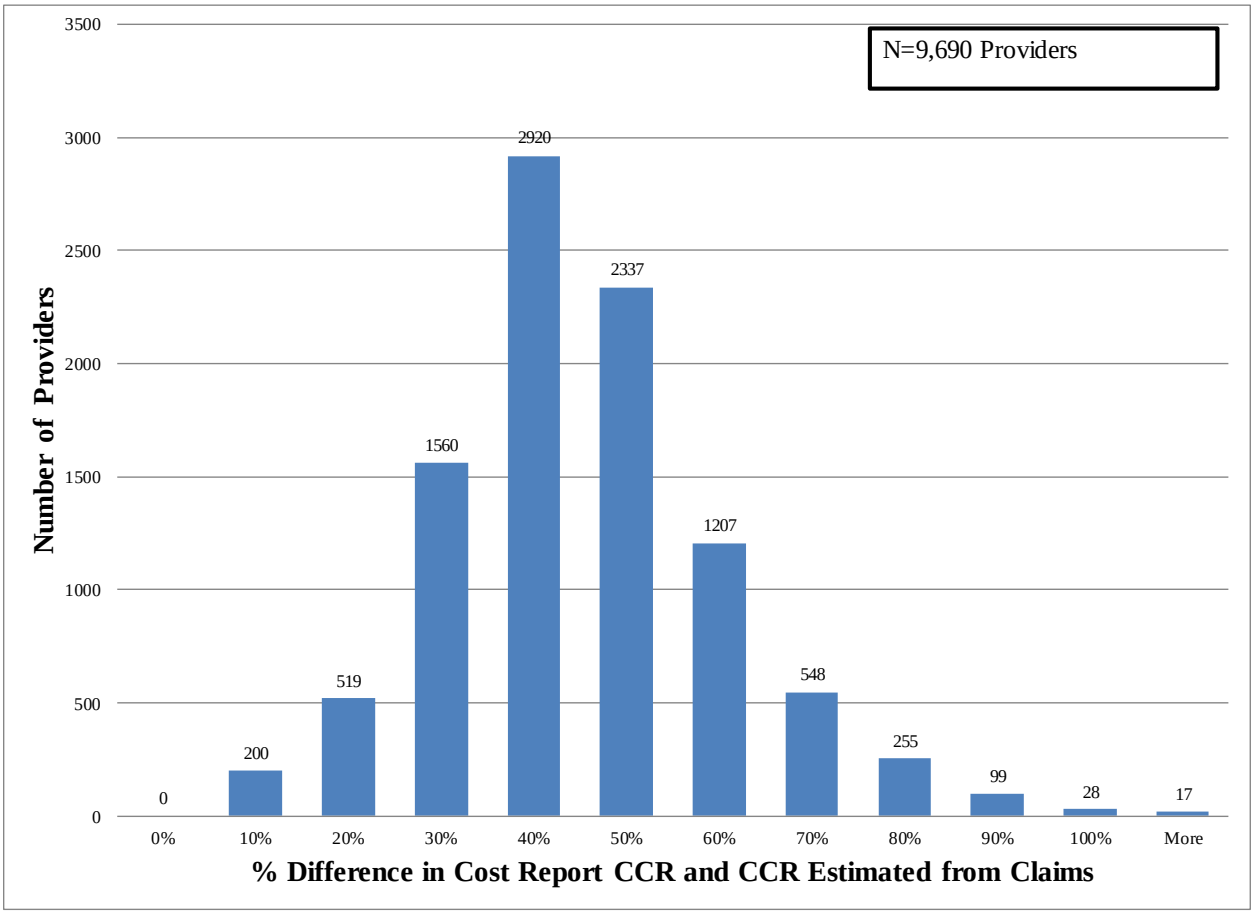


Figure 21: Distribution of % Difference in Cost Report Therapy CCR and Therapy CCR Estimated from Claims



- To check for any trends by facility volume, we created histograms to show the number of providers with cost report therapy CCR > 1 by four levels of facility volume: very small (<1500 covered days), small (1500-3614 covered days), medium (3,615-9,999 covered days) and high-volume (>= 10,000 covered days) facilities. (Methodology to choose cut-points will be explained in the technical appendix).
    - A greater percentage of very small (19%) and small (8%) providers had therapy CCR > 1 as compared to medium (4%) and high-volume (3%) providers (See Appendix D, Figures 22-25).

- No current policy or methodology proposals hinge on use of charge data in claims or CCRs in cost reports. However, these data for therapy services appear to be more consistent and meaningful than do the NTAS data.

Technical Appendix: Methodology

This detailed methodology section provides information on how the analyses discussed in this memo were developed. Steps 1-4 described below apply to both Part 1 (NTAS) and Part 2 (therapy services) of the analysis. Step 5 describes the methodology for the evaluation of NTAS cost and charges, and Step 6 describes the evaluation of therapy cost and charges on claims and cost reports.

Step 1: Selection of Skilled Nursing Facilities for Analysis

As the first step in this analysis we selected a list of SNFs that met the following inclusion criteria:

- SNFs with 2013 claims data (claims data available for calendar year (CY) 2013)
- SNFs with a full year of 2013 cost report data (full year defined as more than 360 days and less than 370 days of cost reporting period).
- SNFs with CY 2013 claims and CY 2013 cost report data.

As shown in the table below, there were a total of 9,856 SNFs remaining after applying the above selection criteria.

Selection Criteria for SNFs

	# of SNFs	**% of total**
Total Skilled Nursing Facilities (SNFs) in 2013 SAFs	***16,702***	***100%***
SNFs with 12 months of 2013 cost report data	13,034	78.0%
SNFs with 2013 claims data and complete 2013 cost report data	12,994	77.8%
SNFs with 2013 calendar year cost report data	9,856	59.0%

Step 2: Definition of Facility Volume

To classify SNFs by facility volume, we examined the distribution of total covered days from 2013 claims data. To compute the number of Medicare covered days we used the revenue center unit count variable associated with revenue center code '0022'. This unit count, which reflects the number of covered days for each HIPPS code, was summed to the facility level to create the facility-level distribution of covered days.

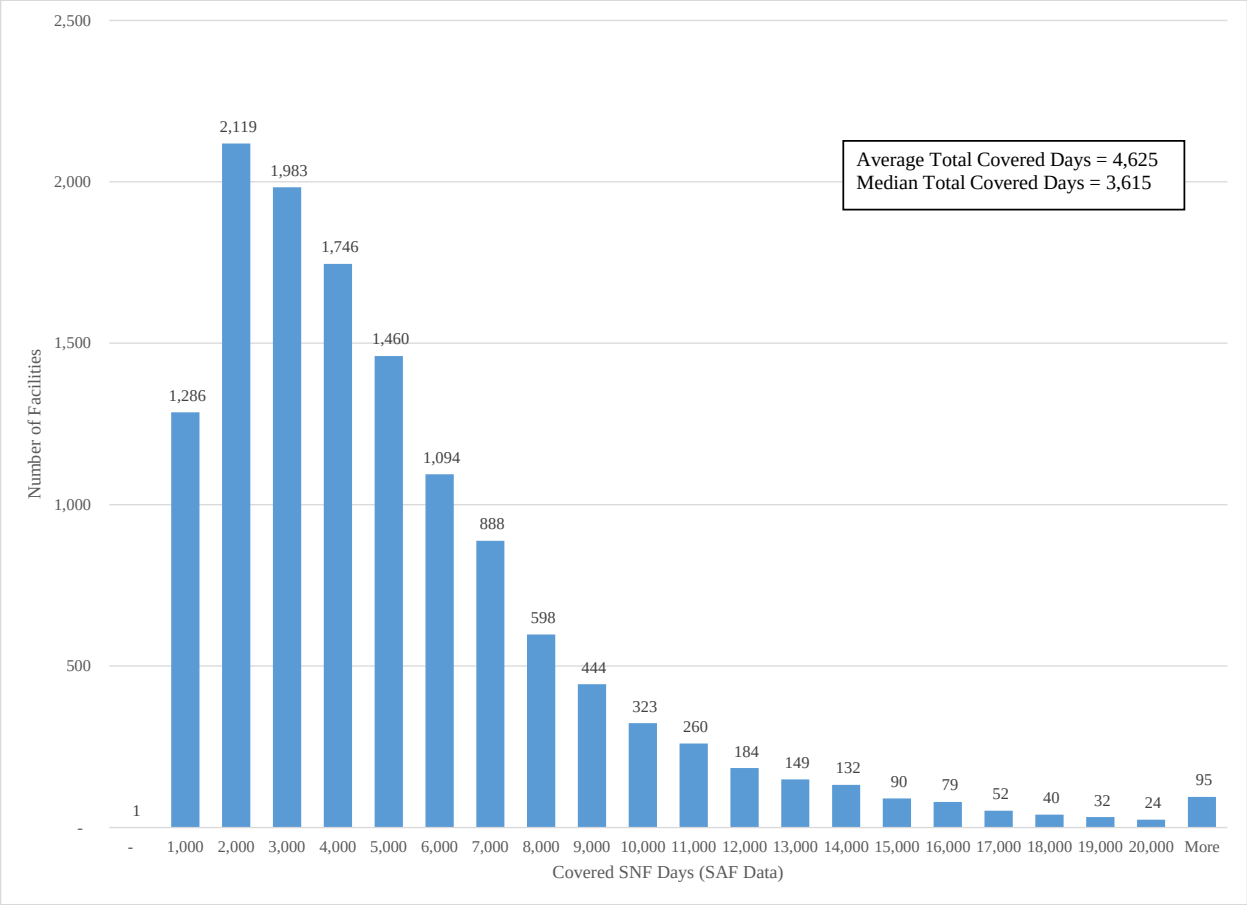
SNFs were classified into the following four categories based on their volume of Medicare covered days:

- Very-small volume (<1,500 days)
- Small volume (1,500-3,614 days)
- Medium volume (3,615-9,999 days)

- High volume (≥10,000 days)

As shown in the graph below, the above thresholds for facility volume were based on the median covered days (3,615 days).

Distribution of Facility-Level Medicare Covered Days from 2013 SAF Data



Step 3: Extraction of Cost Report Data

The following data were extracted from CY 2013 cost reports for the selected SNFs:

- WORKSHEET C, Ratio of Cost to Charges for Ancillary Cost Centers
    - Column 1 (**Total costs** from worksheet B), Column 2 (**Total charges),** Column 3 (col. 1 divided by col. 2) for the following **NTAS** categories:
        - Radiology (Line 40)
        - Laboratory (Line 41)
        - Intravenous Therapy (Line 42)
        - Oxygen (Inhalation) therapy (Line 43)

- Electrocardiology (Line 47)
- Medical Supplies (Line 48)
- Drugs (Line 49)

  - Column 1 (**Total costs** from worksheet B), Column 2 (**Total charges),** Column 3 (col. 1 divided by col. 2) for the following **therapy** cost centers:
    - Physical Therapy (line 44)
    - Occupational Therapy (line 45)
    - Speech Pathology (line 46)

- WORKSHEET S-3, Part 1- Statistical Data
  - Line 1, Column 4 (Title XVIII)- inpatient Medicare covered days for SNFs
  - Line 1, Column 7- total inpatients days for SNFs

Step 4: Classification of Revenue Center Codes on Claims Data into Ancillary Service Categories

On the cost reports, costs and charges are reported separately for each ancillary service cost center. However, on SNF claims, charges for NTAS and therapy services are reported on corresponding revenue center codes in the SNF revenue center file. To compare charges on claims and cost reports, we created a crosswalk of revenue center codes for NTAS and therapy services on claims to the ancillary services cost centers shown on Worksheet C of SNF cost reports. This was done by examining the distribution of revenue center codes on claims data and mapping them to their relevant ancillary cost center as shown in the tables below. For each of these revenue codes, we extracted data for charges from SNF claims. The variable of interest is the 'Revenue Center Total Charge Amount' in the SNF revenue center file.

Crosswalk of Revenue Center Codes on SNF Claims to Non-Therapy Ancillary Service (NTAS) Cost Centers on Worksheet C of SNF Cost Reports

NTAS Cost Center	Revenue Center Codes from SNF Claims
Drugs	0250, 0251, 0252, 0255, 0257, 0258, 0259, 0636
Laboratory	0300, 0301, 0302, 0304, 0305, 0306, 0307, 0309, 0310, 0311, 0312, 0319
Medical Supplies	0270, 0271, 0272, 0273, 0274, 0275, 0276, 0277, 0278, 0279, 0623
Radiology	0320, 0321, 0322, 0323, 0324, 0329, 0330, 0331, 0333, 0335, 0339, 0340, 0341, 0343, 0349, 0350, 0351, 0352, 0400, 0401, 0402, 0404, 0409, 0610, 0611
Oxygen (Inhalation) Therapy	0410, 0412, 0413, 0419
Intravenous Therapy	0260, 0261, 0262, 0263, 0264, 0269
Electrocardiology	0480, 0481, 0482, 0483, 0489, 0730, 0731, 0732, 0739

Crosswalk of Therapy Revenue Center Codes on SNF Claims to Therapy Cost Centers on Worksheet C of SNF Cost Reports

Therapy Cost Center	Revenue Center Codes from SNF Claims
Physical Therapy	0420, 0421, 0422, 0423, 0424, 0429
Occupational Therapy	0430, 0431, 0432, 0433, 0434, 0439
Speech Language Pathology	0440, 0441, 0442, 0443, 0444, 0449

Step 5: Part 1 Evaluation of NTAS Cost and Charge Data on Claims and Cost Reports

For the selected SNF providers, the completeness, variability, and reliability of each of the seven NTAS categories were evaluated as follows:

- Check whether providers who reported charges for NTAS categories on claims are also reporting NTAS charges on cost reports (test for completeness).
- Check whether total charges reported for each NTAS category on cost reports are equal to or greater than Medicare charges on claims (test for reliability).
- Check facility-level distribution cost to charge ratio (CCR) for each NTAS category. The CCR should not be greater than 1 (test for reliability) or show bi-modal distributions (test for variability).
- Check facility-level distribution of Medicare charge per covered day for each NTAS category from SNF claims (test for variability). A charge per day is computed to standardize total charges.
- Check for any trends in facility CCR by facility volume.

Step 6: Part 2 Evaluation of Therapy Cost and Charge Data on Claims and Cost Reports

On SNF claims data it is not possible to differentiate between charges for the three therapy disciplines: physical therapy (PT), occupational therapy (OT) and speech-language pathology (SLP), whereas on the SNF cost reports, cost, charges, and CCRs are reported separately for physical therapy (PT), occupational therapy (OT) and speech-language pathology (SLP).

To compare cost report data for therapy charges to claims data, we summed therapy charges for all 3 disciplines to estimate the combined therapy charges for the selected facilities. From SNF claims data, we estimated therapy CCRs for the selected facilities as follows:

- Determine the frequency distribution of days under each RUG category
- Convert RUG days to minutes using the lower limit of the minutes of therapy per week for each RUG *(Assumption: RUGs are assigned to the lower limit of the RUG classification system, i.e. the minimum minutes needed to qualify for a particular RUG)*
    - Ultra-high (>=720 minutes)
    - Very high (500-719 minutes)

  - High (325-499 minutes)
  - Medium (150-324 minutes)
  - Low (45-149 minutes)
- Estimate therapy costs assuming that one minute of therapy costs $1.
- Estimate therapy CCR by dividing facilities total therapy costs by total reported therapy charges on claims.

For all facilities, therapy CCRs estimated using claims data were compared to therapy CCRs based on cost report data by examining the distributions of CCRs and estimating a percentage difference in CCRs between the two data sources. Distribution of CCRs were also examined based on four levels of facility volume to check for any trends.

Part 1 Appendices: Evaluation of NTAS Cost and Charge Data on Claims and Cost Reports

The supplemental graphs for Part 1 of this analysis are shown in Appendices A, B and C and are grouped as follows:

- **Appendix A:** Distribution of Cost to Charge Ratio for Each NTAS Category in CY 2013
  - Figures 1-7

- **Appendix B:** Distribution of Medicare Charge per Covered Day for Each NTAS Category in CY 2013
  - Figures 8-14

- **Appendix C:** Distribution of NTAS Cost to Charge Ratio by Facility Volume in CY 2013
  - Figures 16-19

Appendix A: Distribution of Cost to Charge Ratio for Each NTAS Category in CY 2013

Figure 1: Distribution of Drugs CCR as Reported on CY 2013 SNF Cost Reports

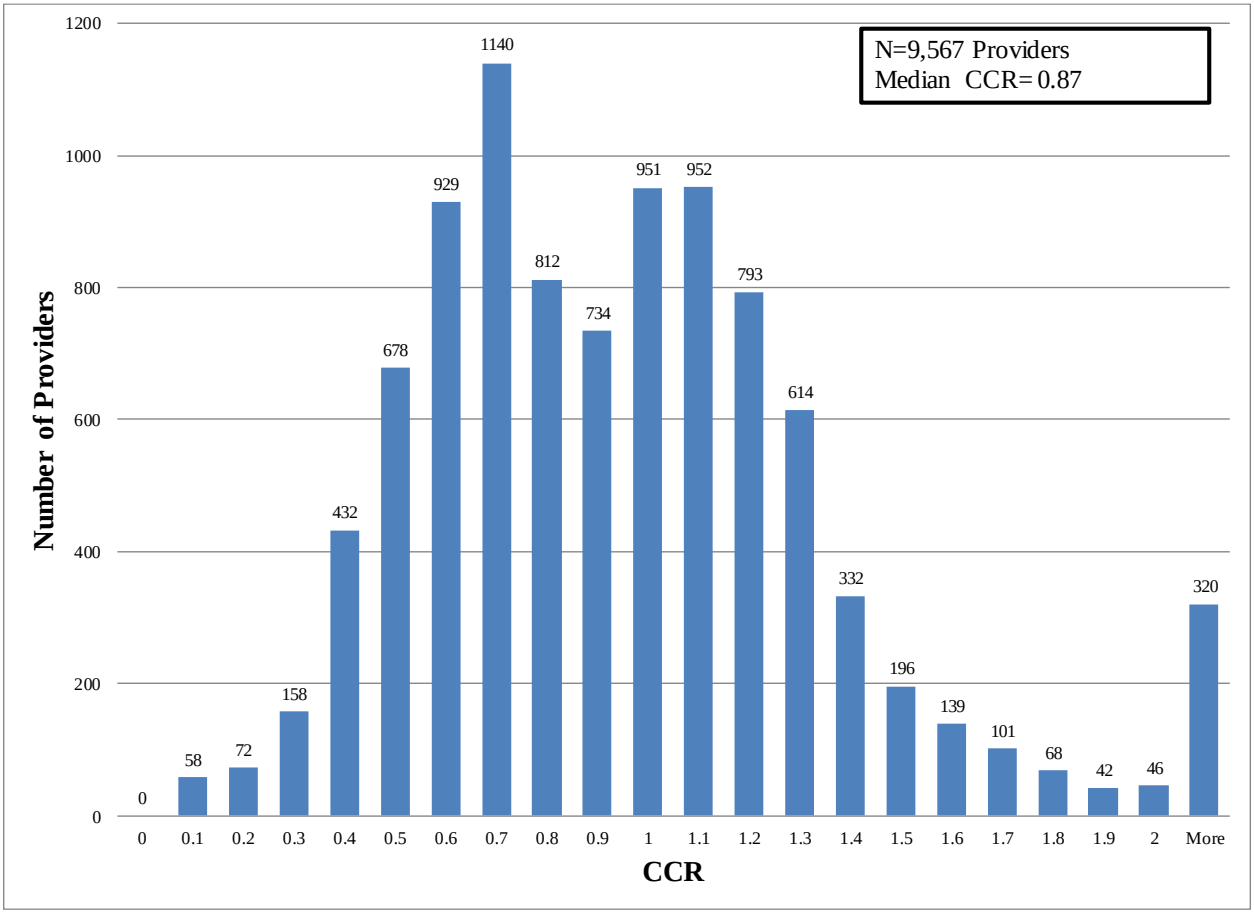


Figure 2: Distribution of Laboratory CCR as Reported on CY2013 SNF Cost Reports

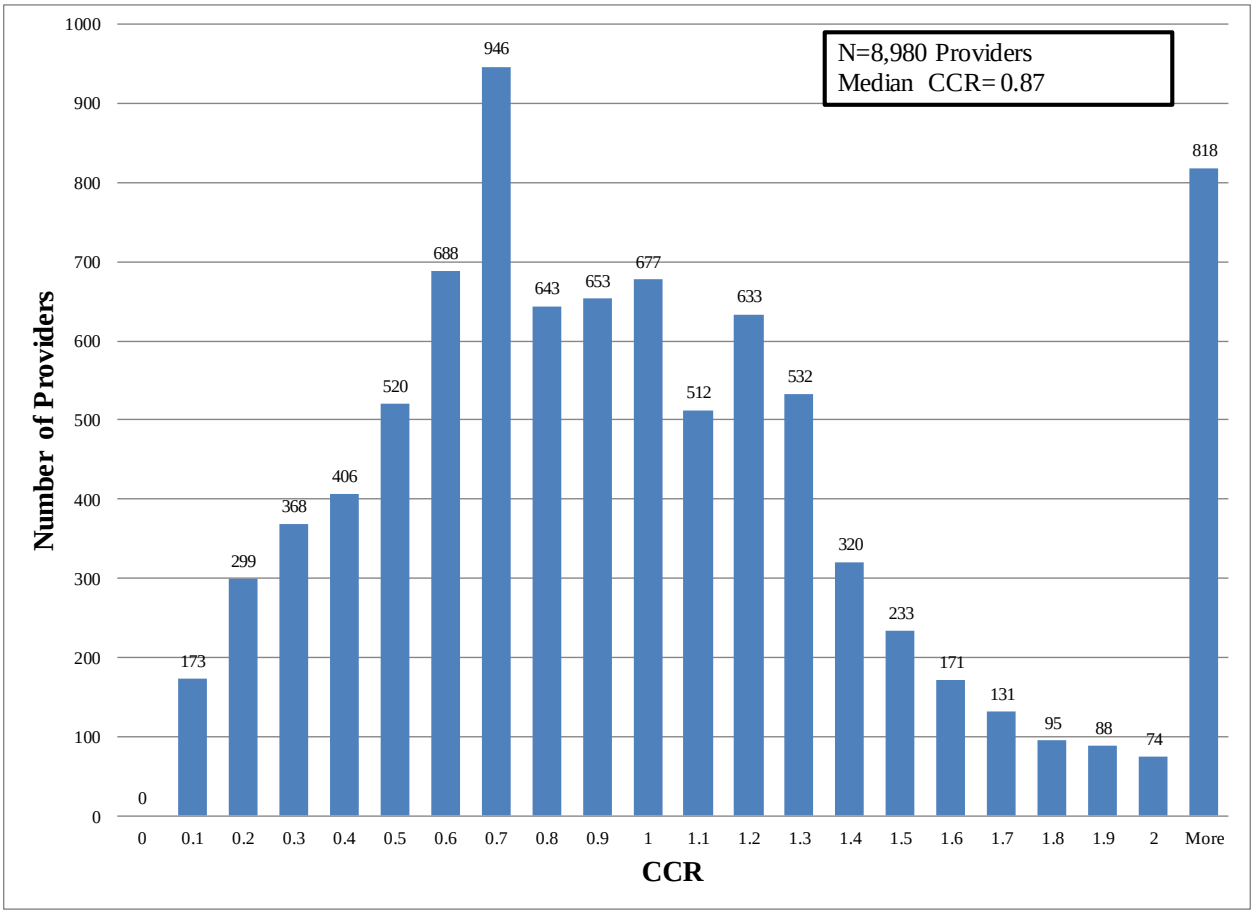


Figure 3: Distribution of Radiology CCR as Reported on CY2013 SNF Cost Reports

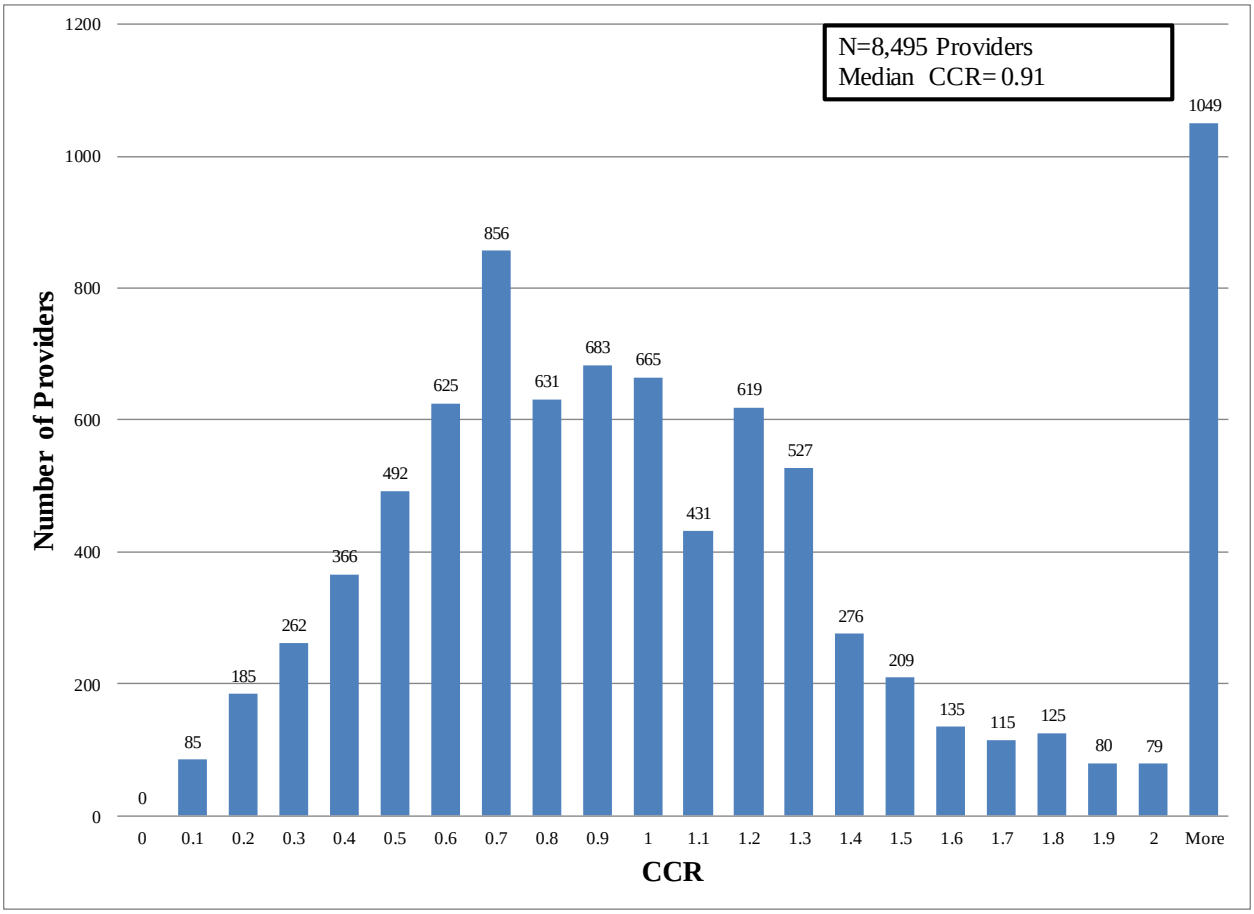


Figure 4: Distribution of <u>Medical Supplies</u> CCR as Reported on CY2013 SNF Cost Reports

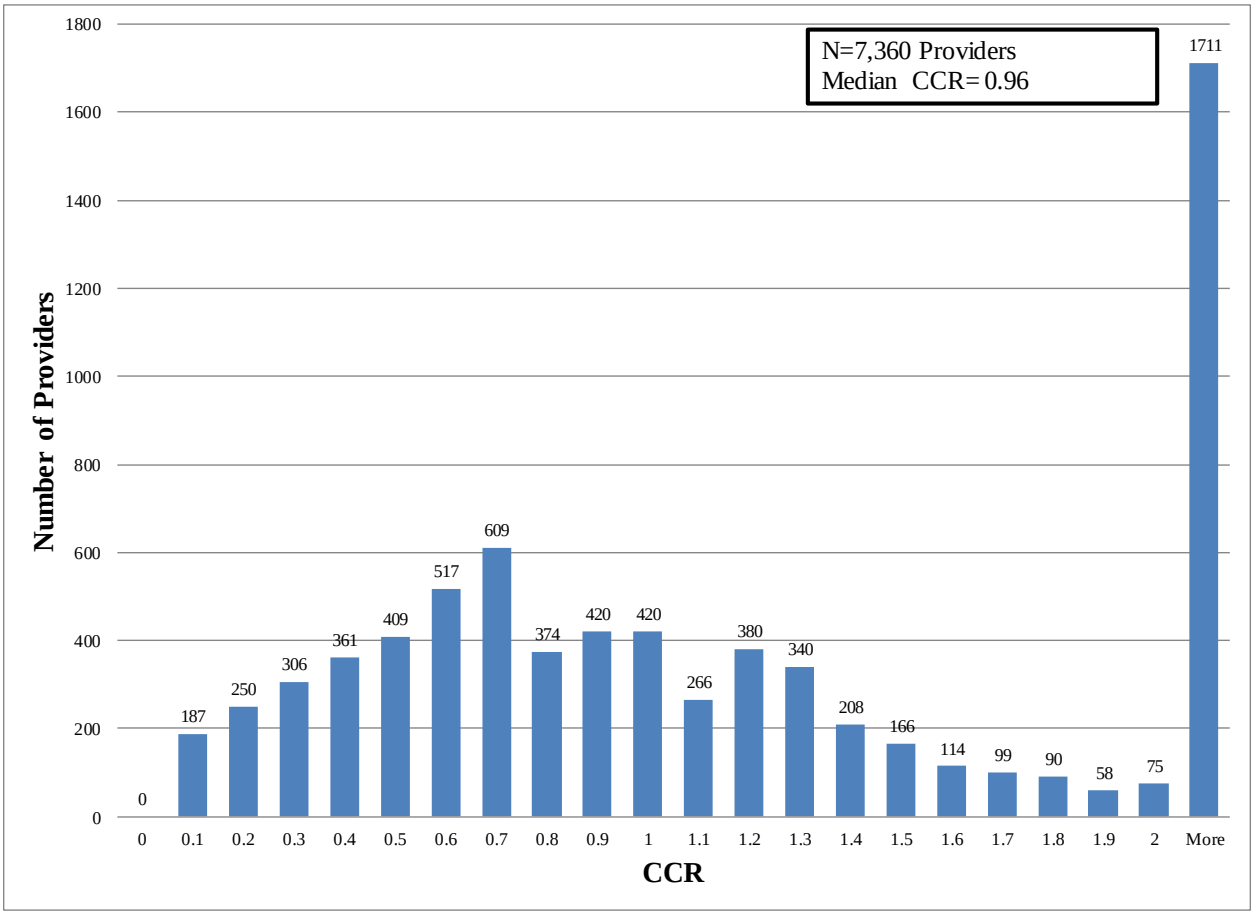


Figure 5: Distribution of Intravenous Therapy CCR as Reported on CY2013 SNF Cost Reports

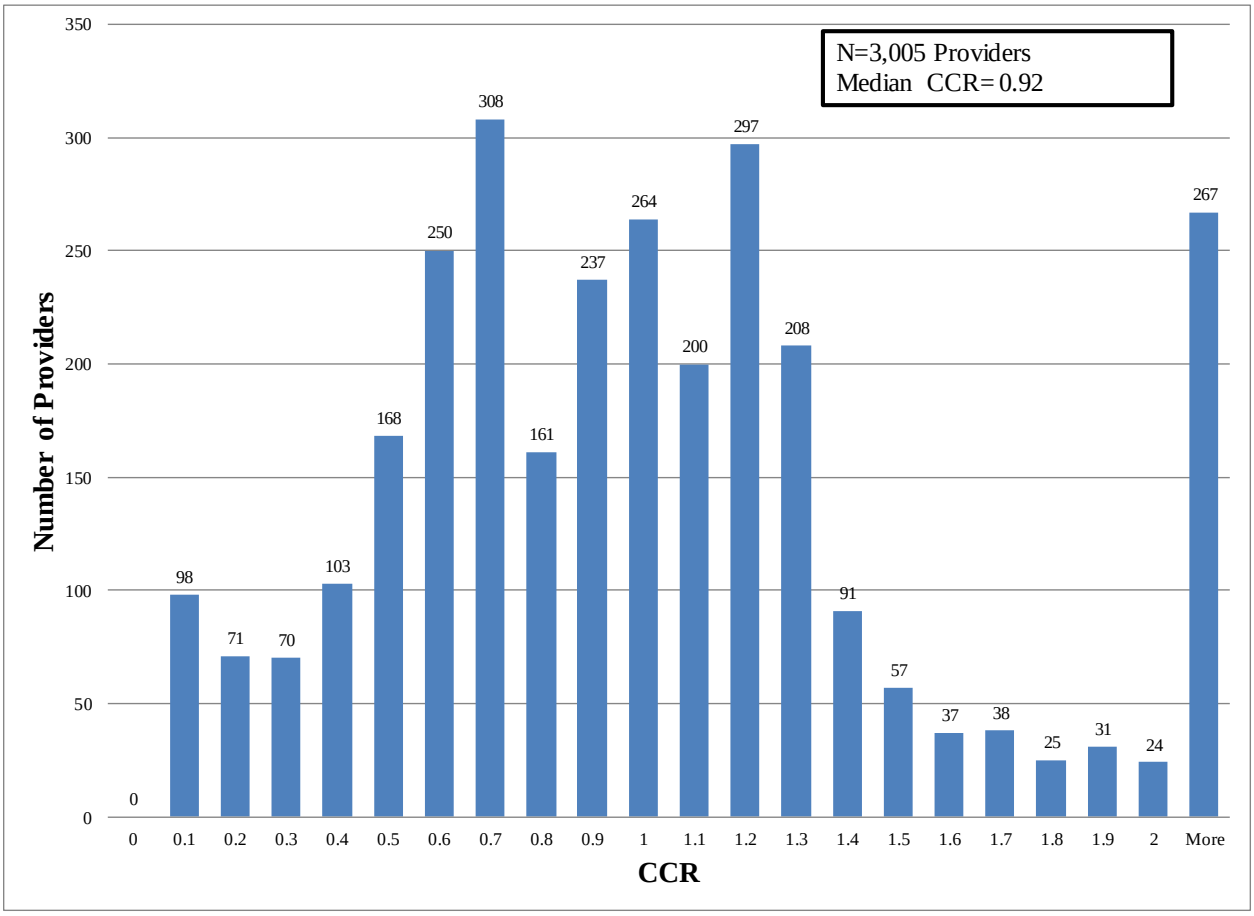


Figure 6: Distribution of <u>Oxygen (Inhalation) Therapy</u> CCR as Reported on CY2013 SNF Cost Reports

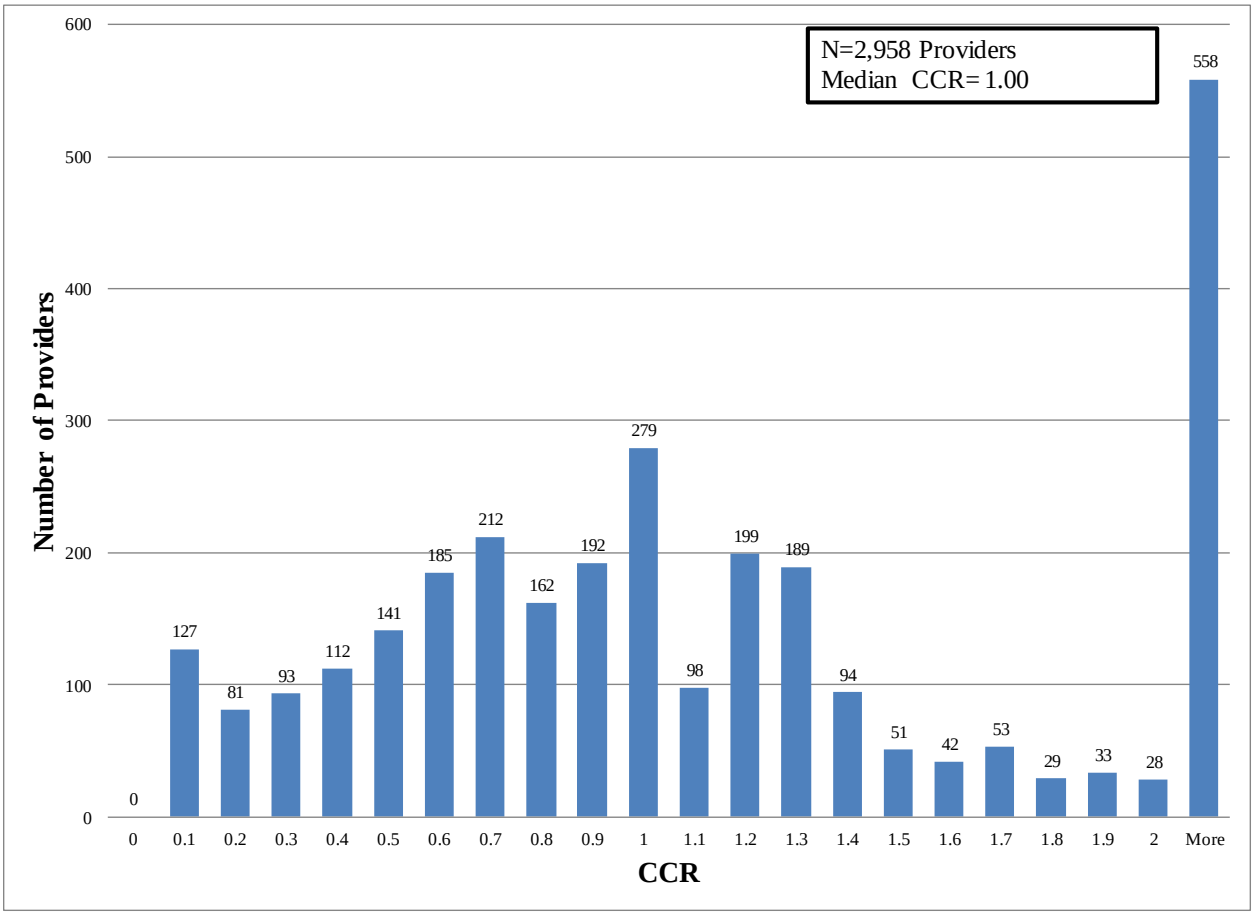
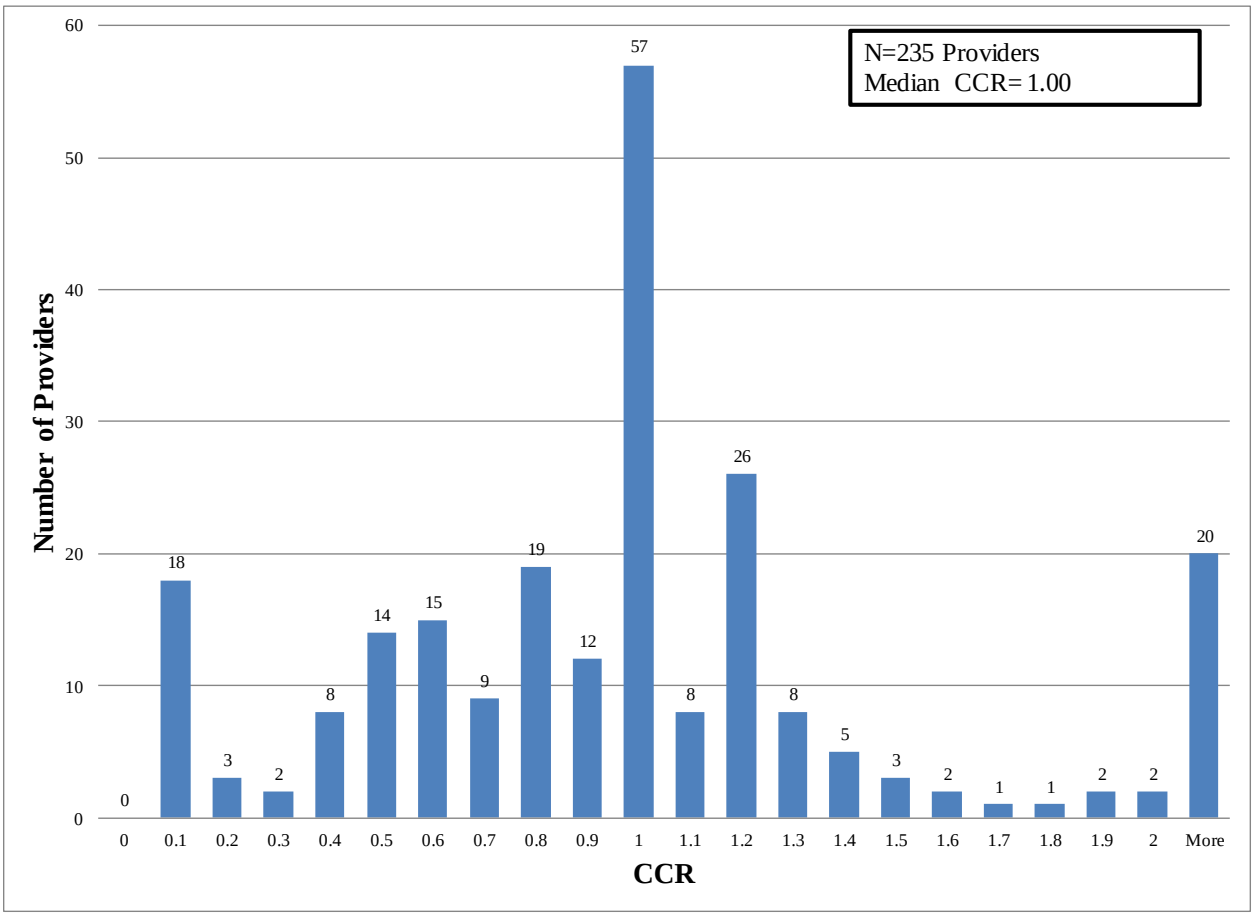


Figure 7: Distribution of <u>Electrocardiology</u> CCR as Reported on CY2013 SNF Cost Reports



Appendix B: Distribution of Medicare Charge per Covered Day for Each NTAS Category in CY 2013

Figure 8: Drugs Charge per Day Estimated from Claims

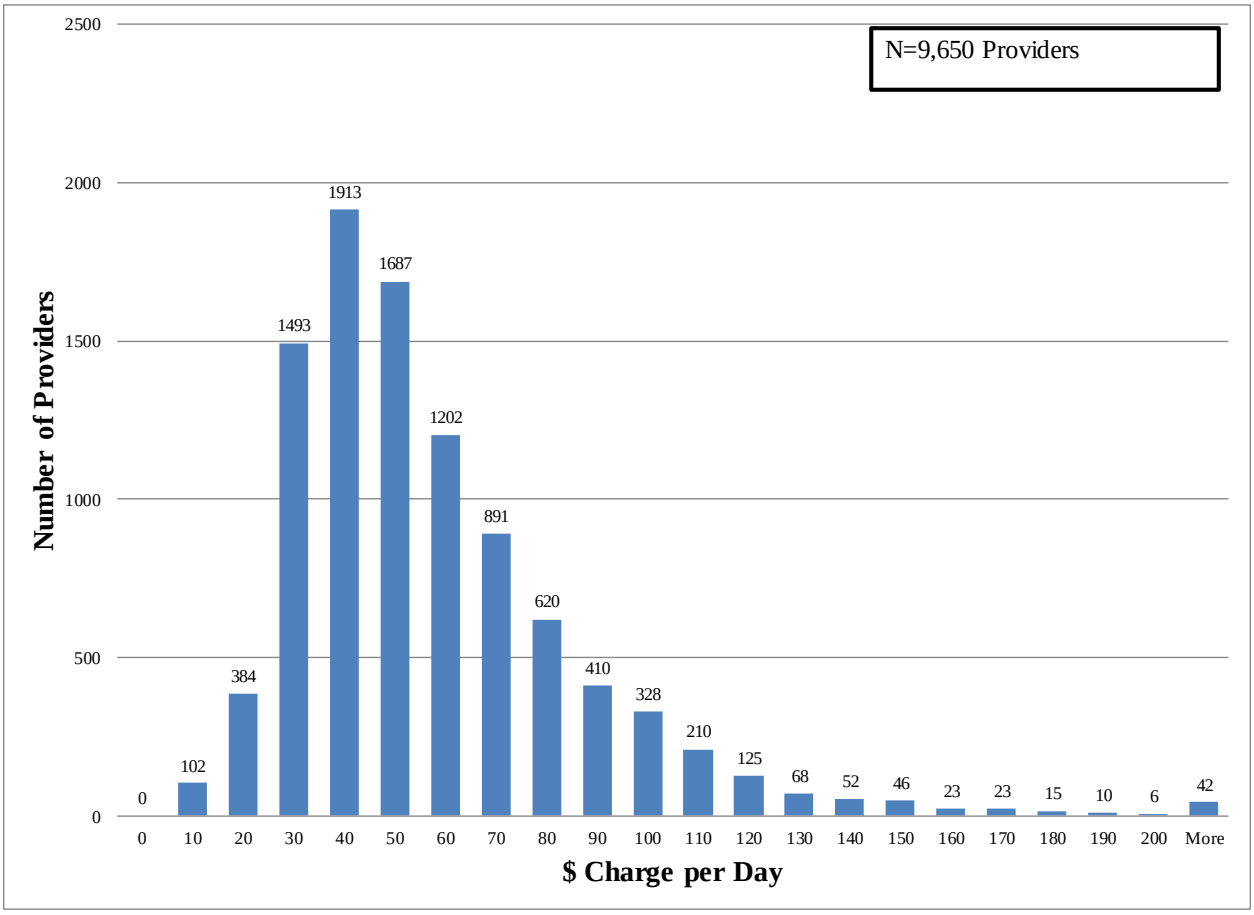


Figure 9: Laboratory Charge per Day Estimated from Claims

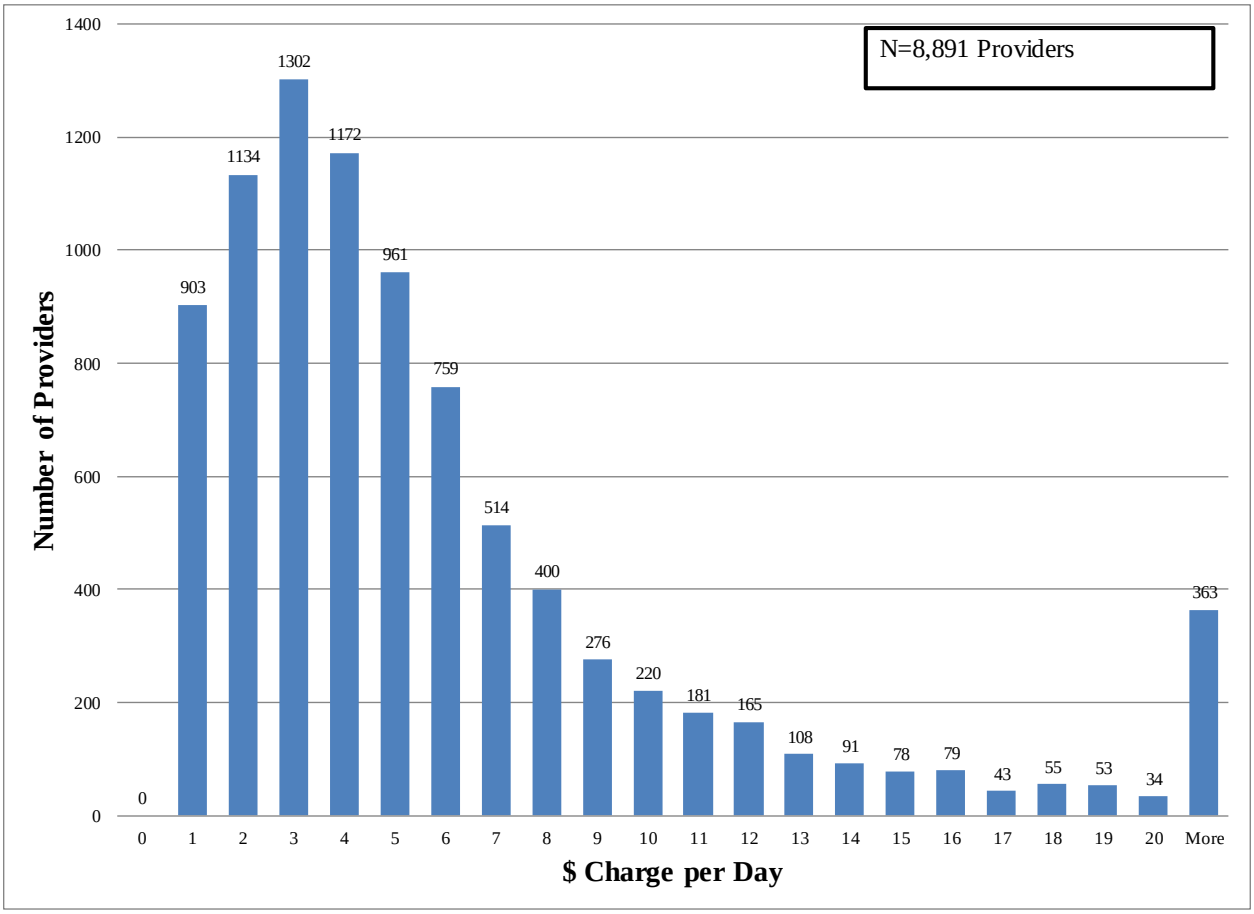


Figure 10: Radiology Charge per Day Estimated from Claims

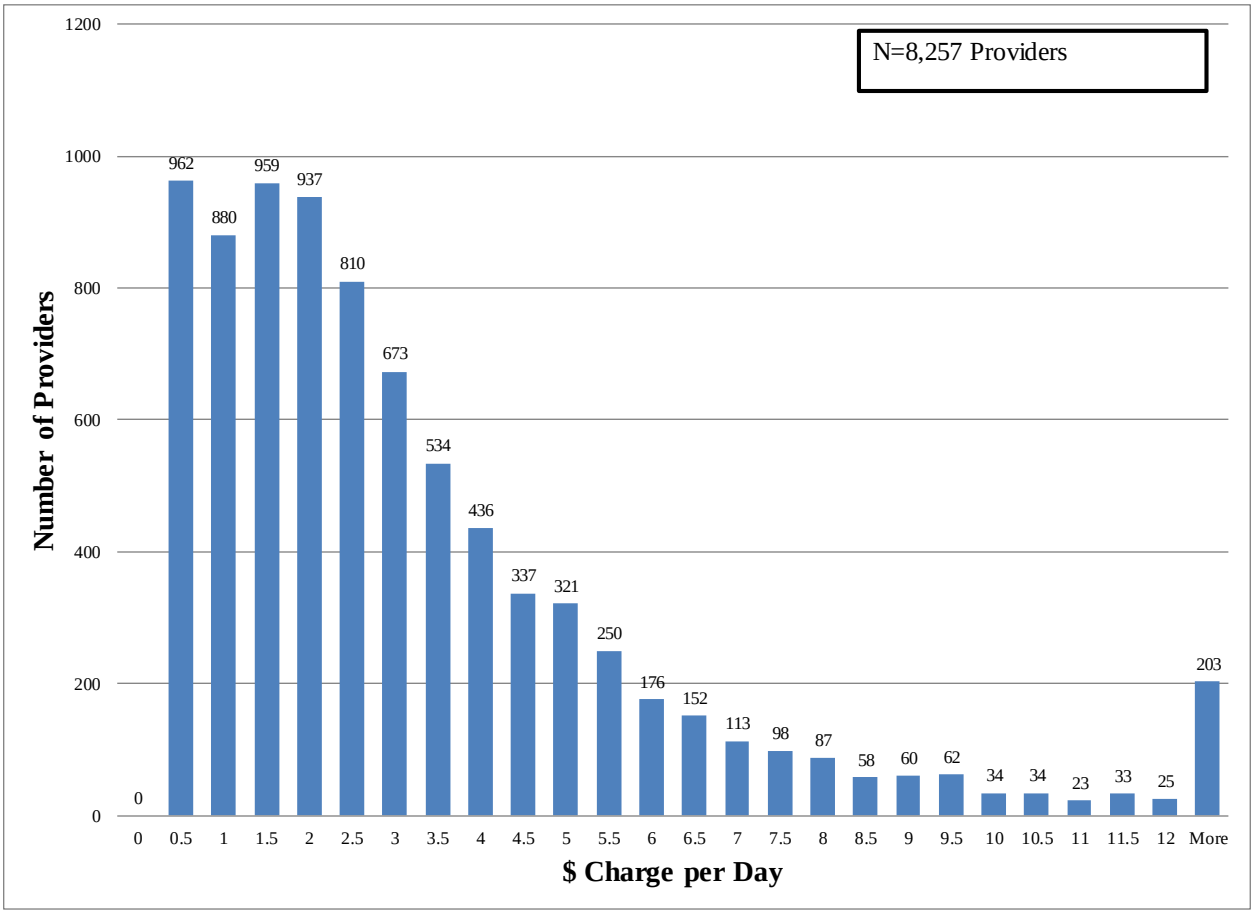


Figure 11: Medical Supplies Charge per Day Estimated from Claims

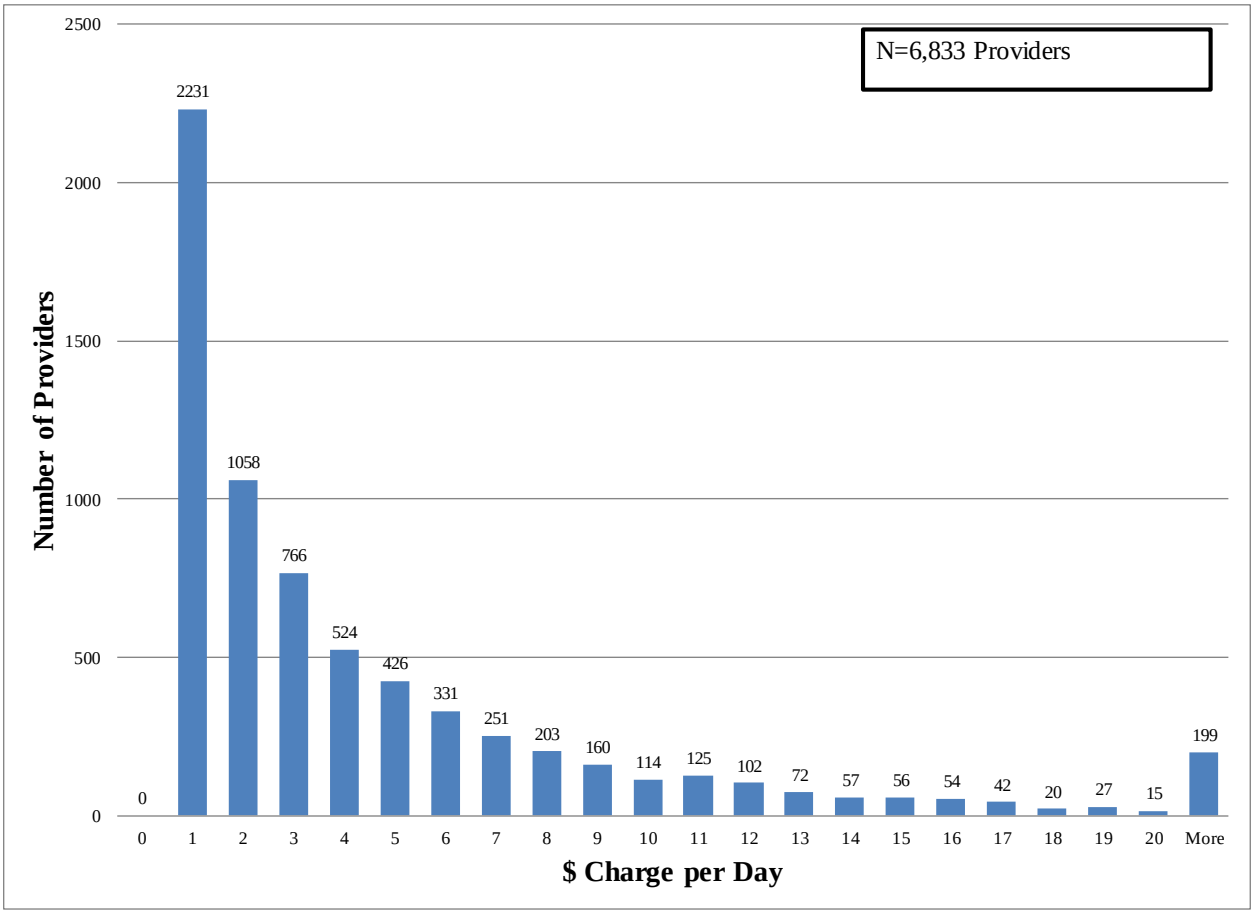


Figure 12: Intravenous Therapy Charge per Day Estimated from Claims

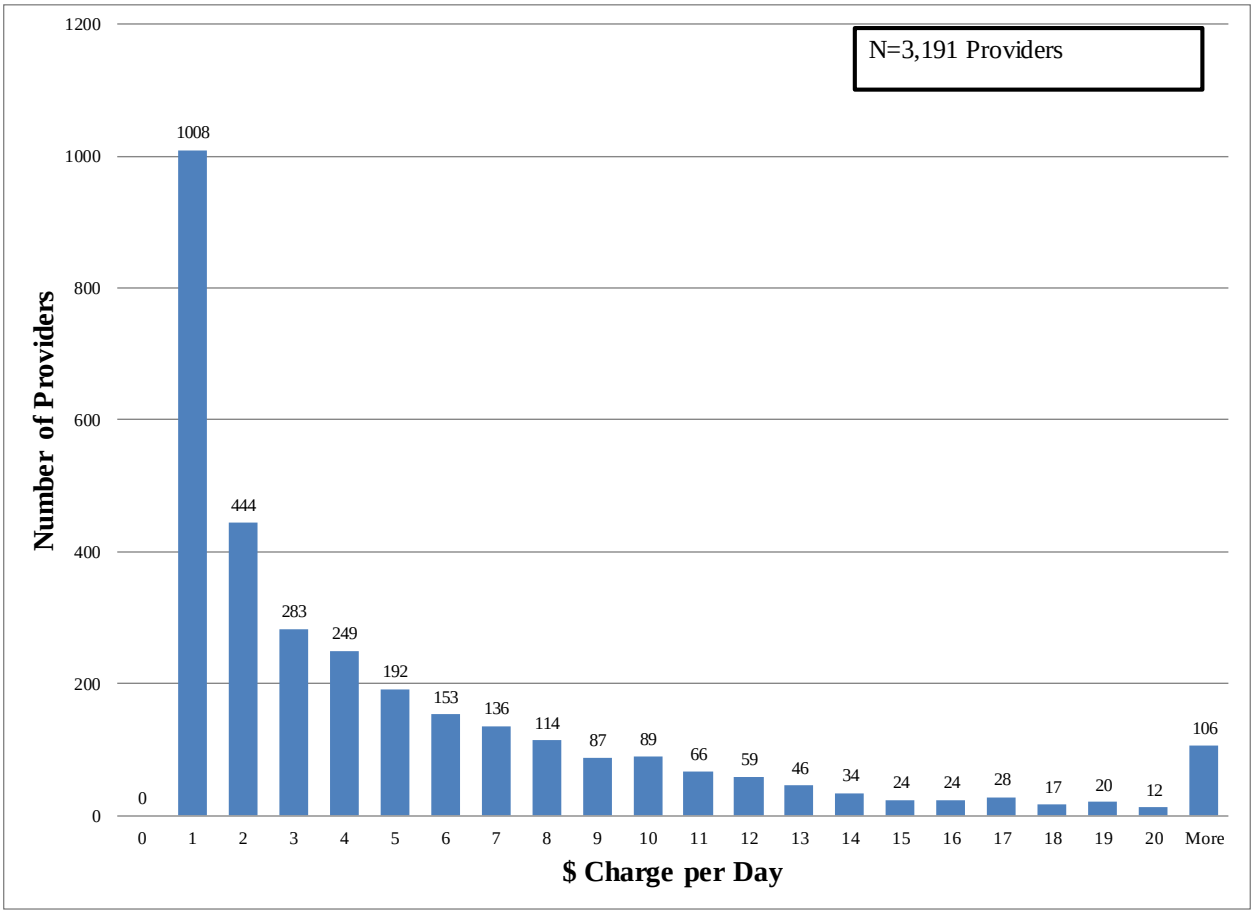


Figure 13: <u>Oxygen (Inhalation) Therapy</u> Charge per Day Estimated from Claims

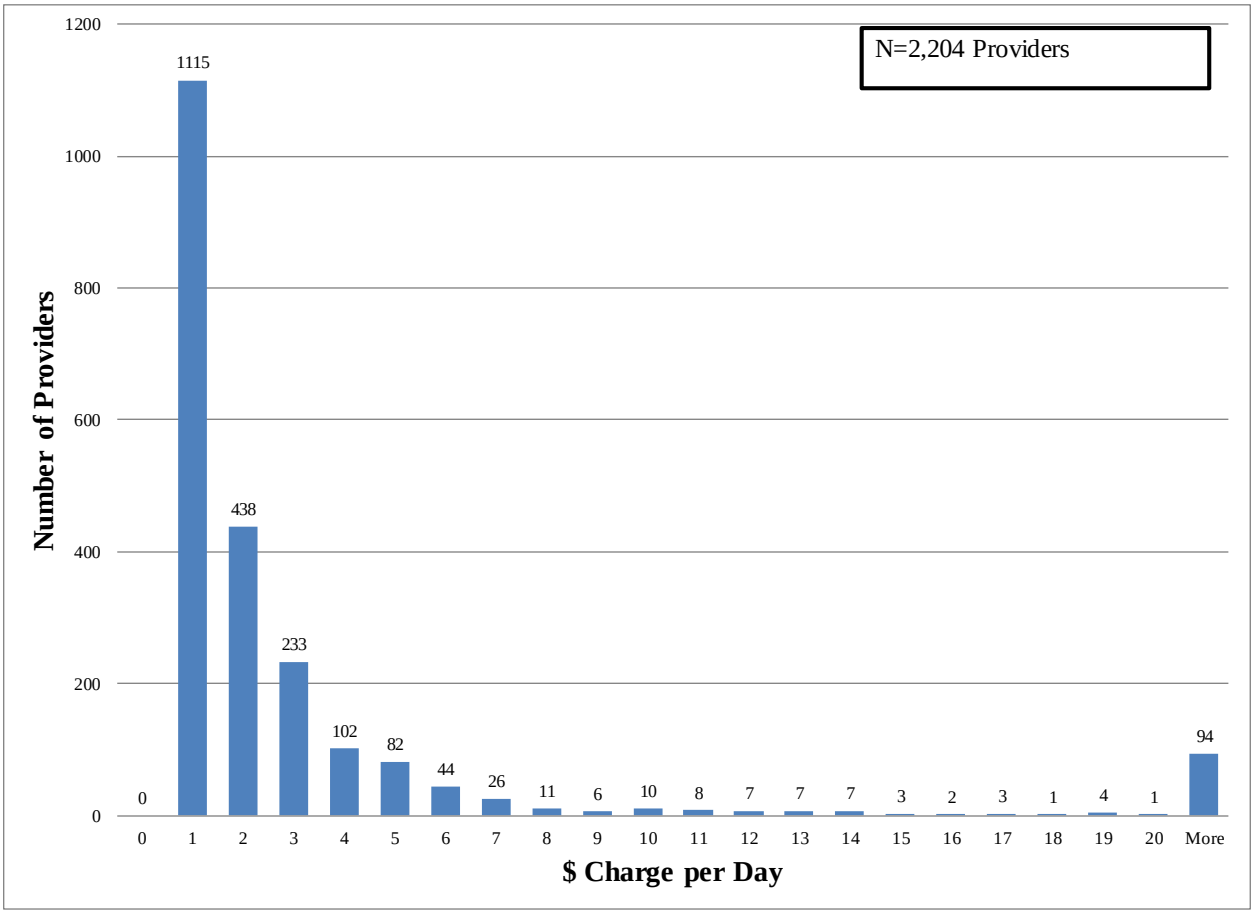
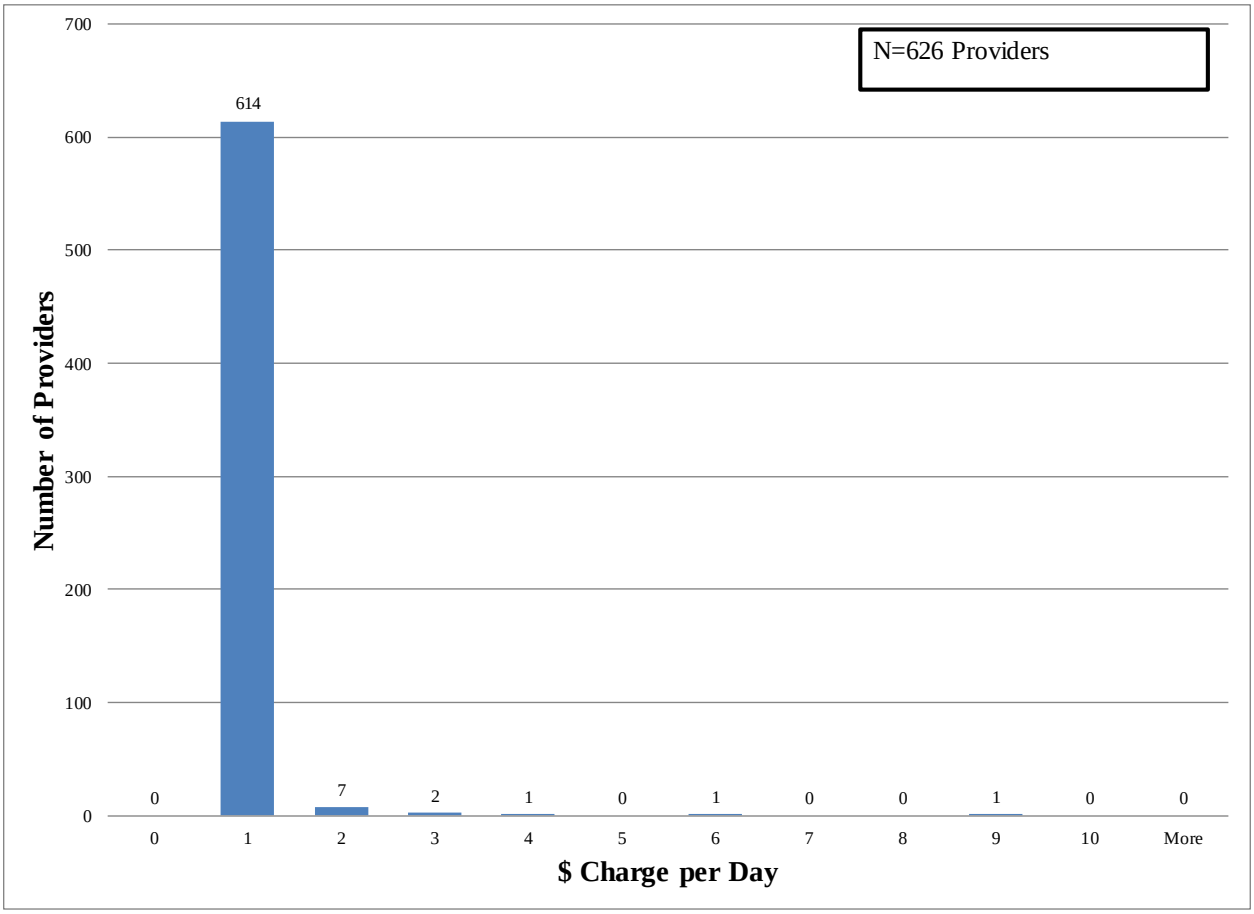


Figure 14: Electrocardiology Charge per Day Estimated from Claims



Appendix C: Distribution of NTAS Cost to Charge Ratio by Facility Volume

Figure 16: Distribution of NTAS CCR in Very-Small Volume Providers as Reported on CY 2013 SNF Cost Reports

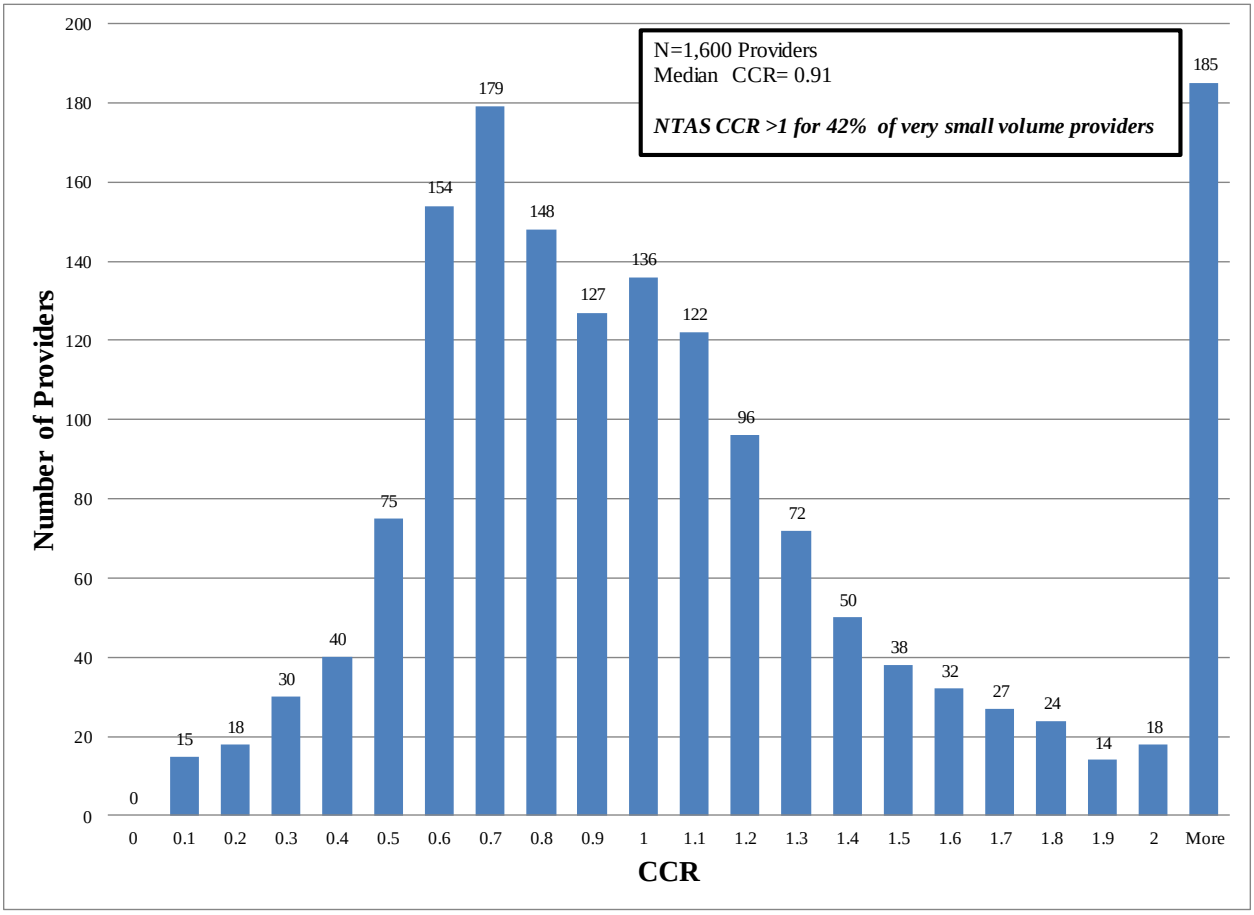


Figure 17: Distribution of NTAS CCR in Small Volume Providers as Reported on CY 2013 SNF Cost Reports

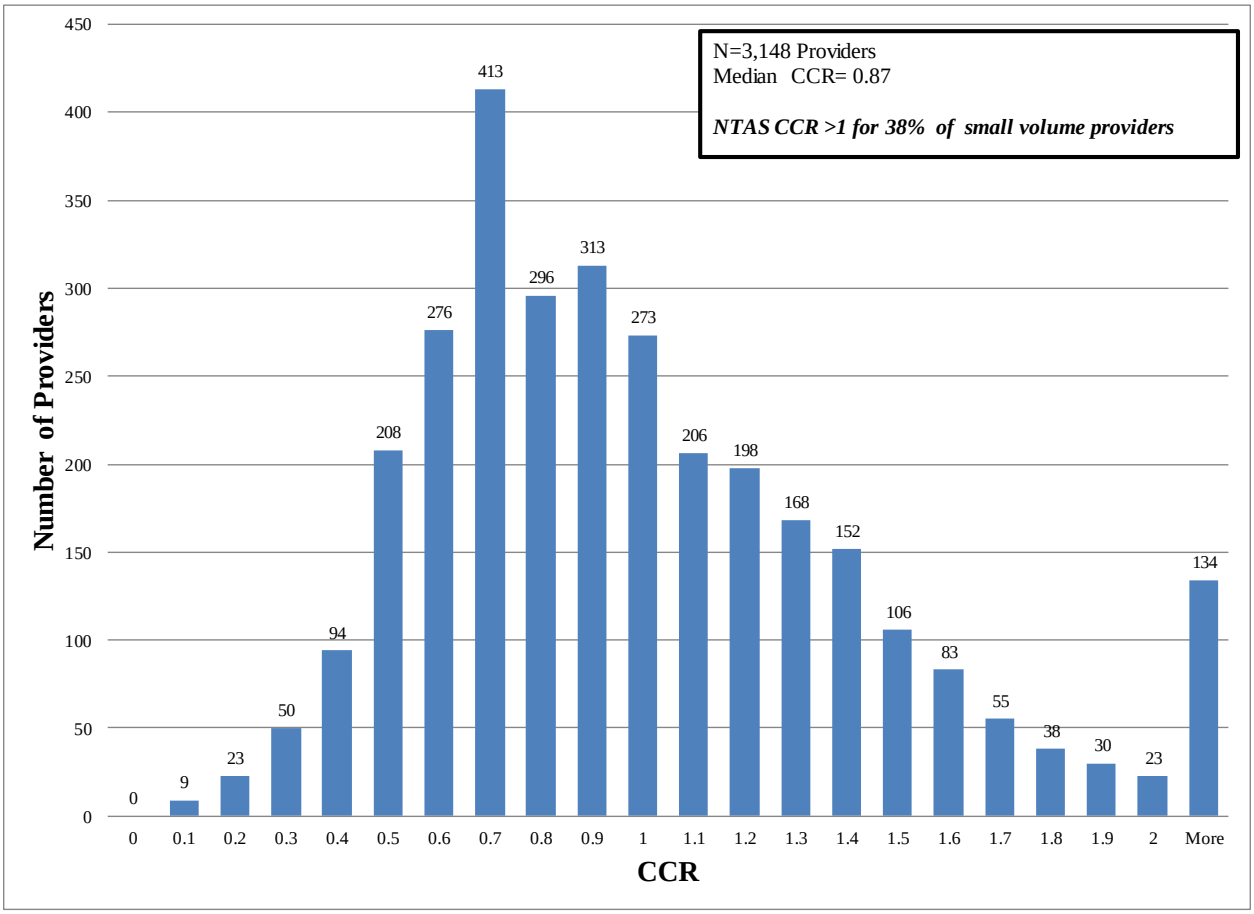


Figure 18: Distribution of NTAS CCR in Medium Volume Providers as Reported on CY 2013 SNF Cost Reports

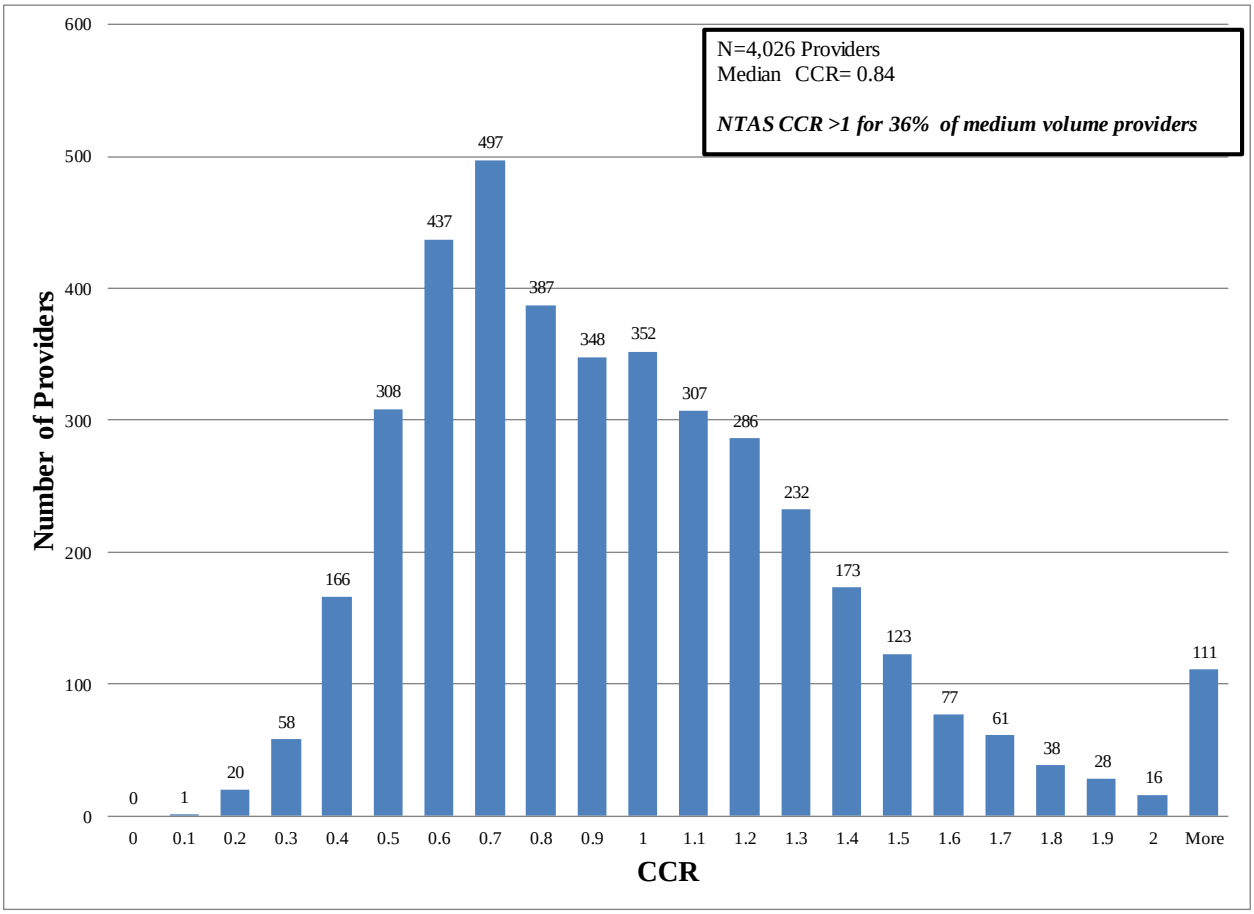
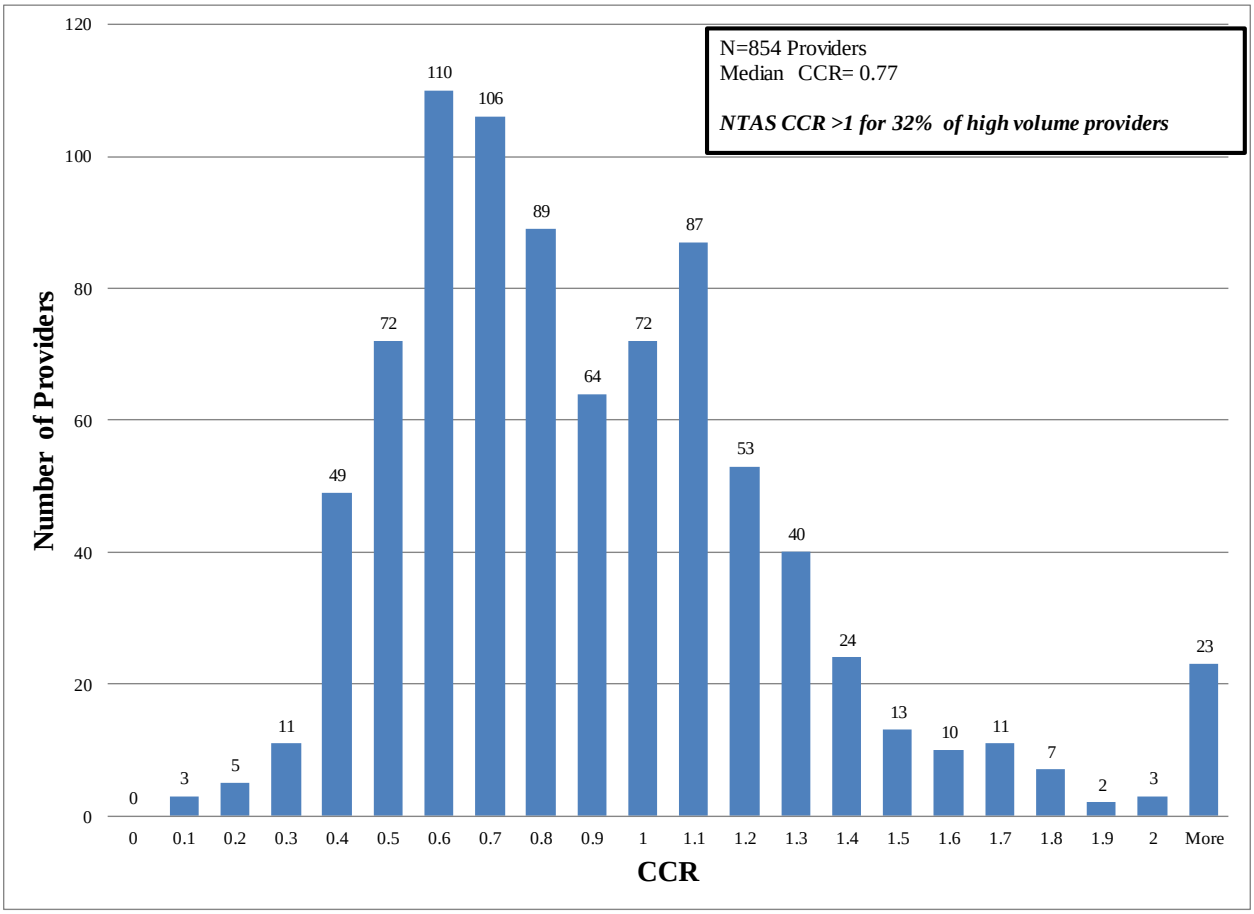


Figure 19: Distribution of NTAS CCR in <u>High Volume Providers</u> as Reported on CY 2013 SNF Cost Reports



Part 2 Appendix: Evaluation of Therapy Cost and Charge Data on Claims and Cost Reports

The supplemental graphs for Part 2 of this analysis are shown in Appendix D. This includes the distribution of therapy cost to charge ratios by four levels of facility volume (Figures 22-25)

Appendix D: Therapy CCR by Facility Volume

Figure 22: Distribution of Therapy CCR in Very-Small Volume Providers as Reported on CY 2013 SNF Cost Reports

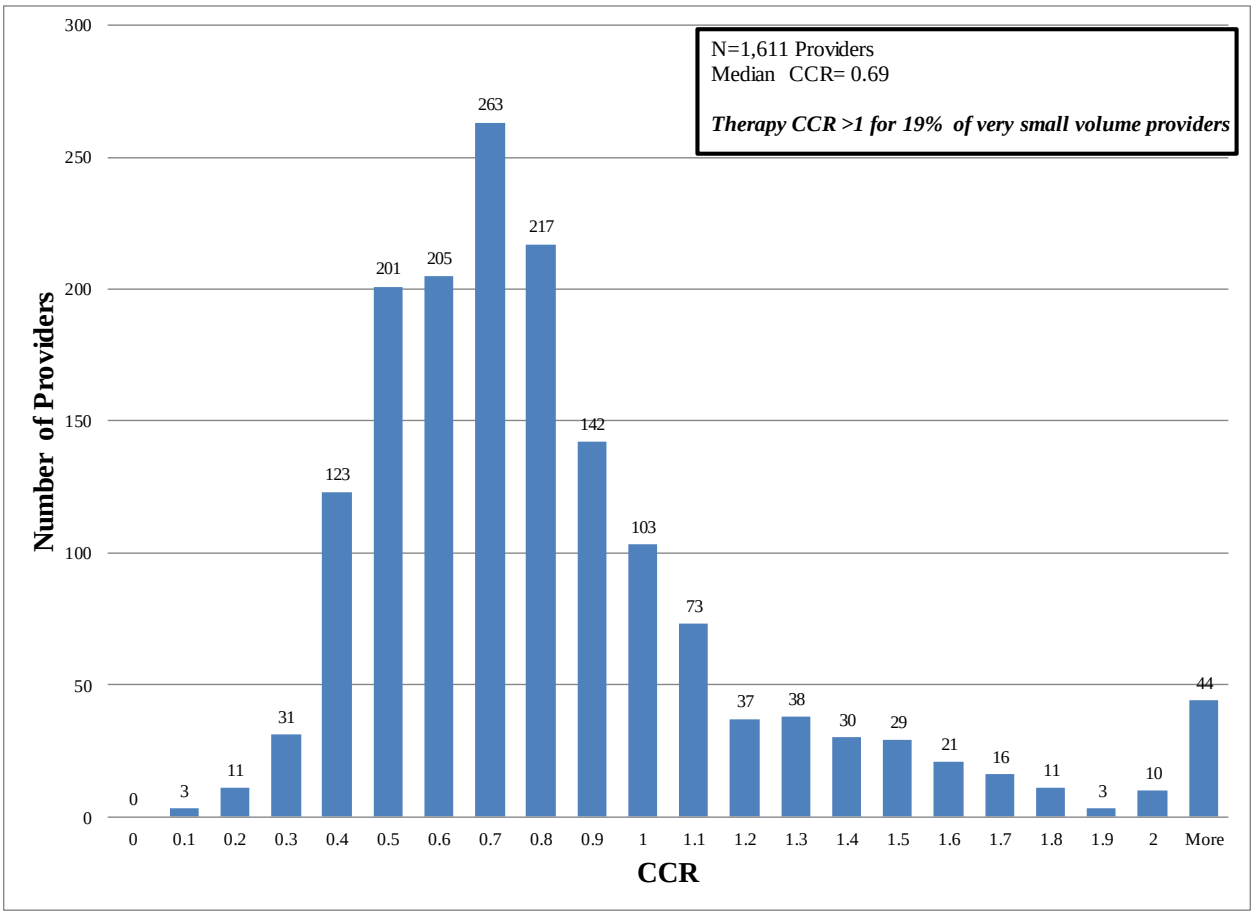


Figure 23: Distribution of Therapy CCR in <u>Small Volume Providers</u> as Reported on CY 2013 SNF Cost Reports

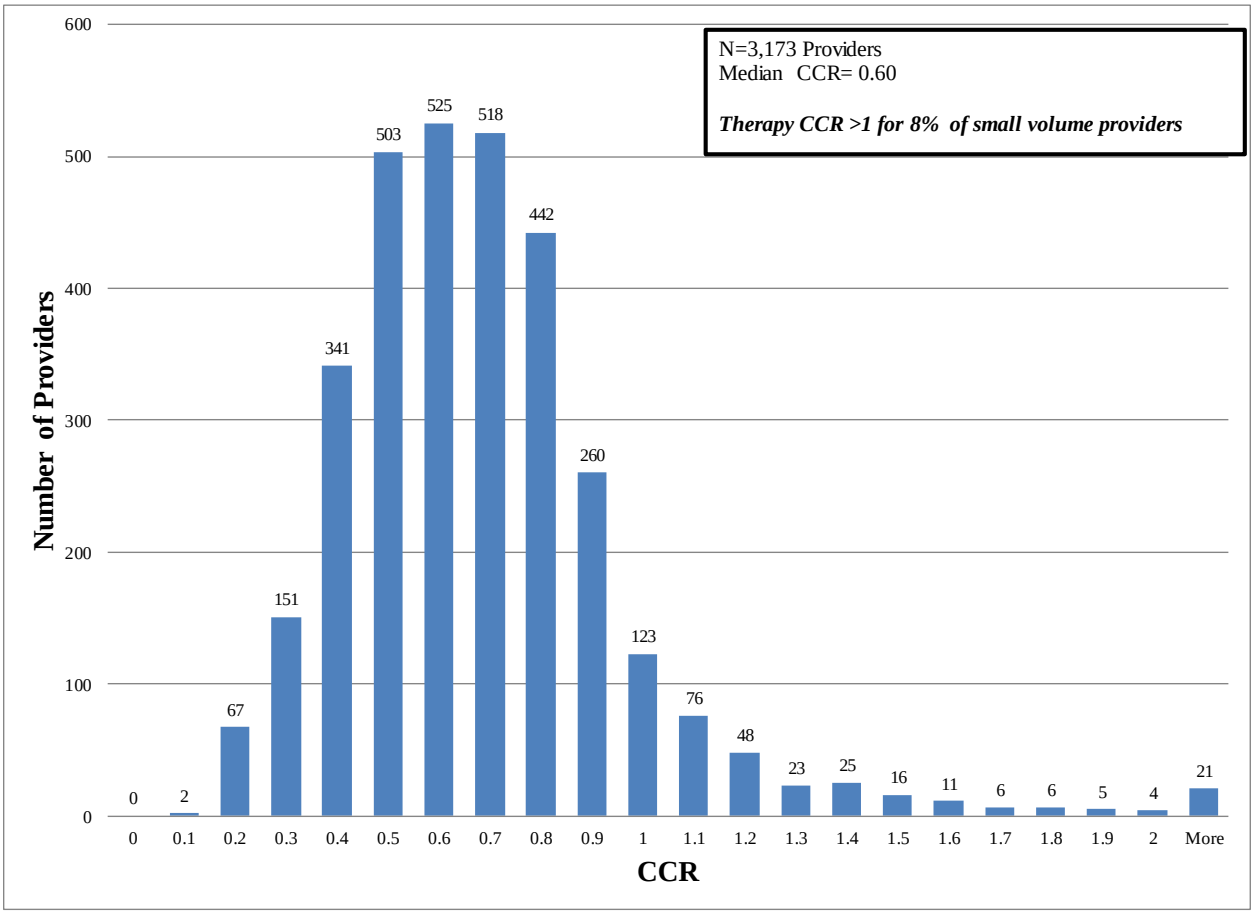


Figure 24: Distribution of Therapy CCR in <u>Medium Volume Providers</u> as Reported on CY 2013 SNF Cost Reports

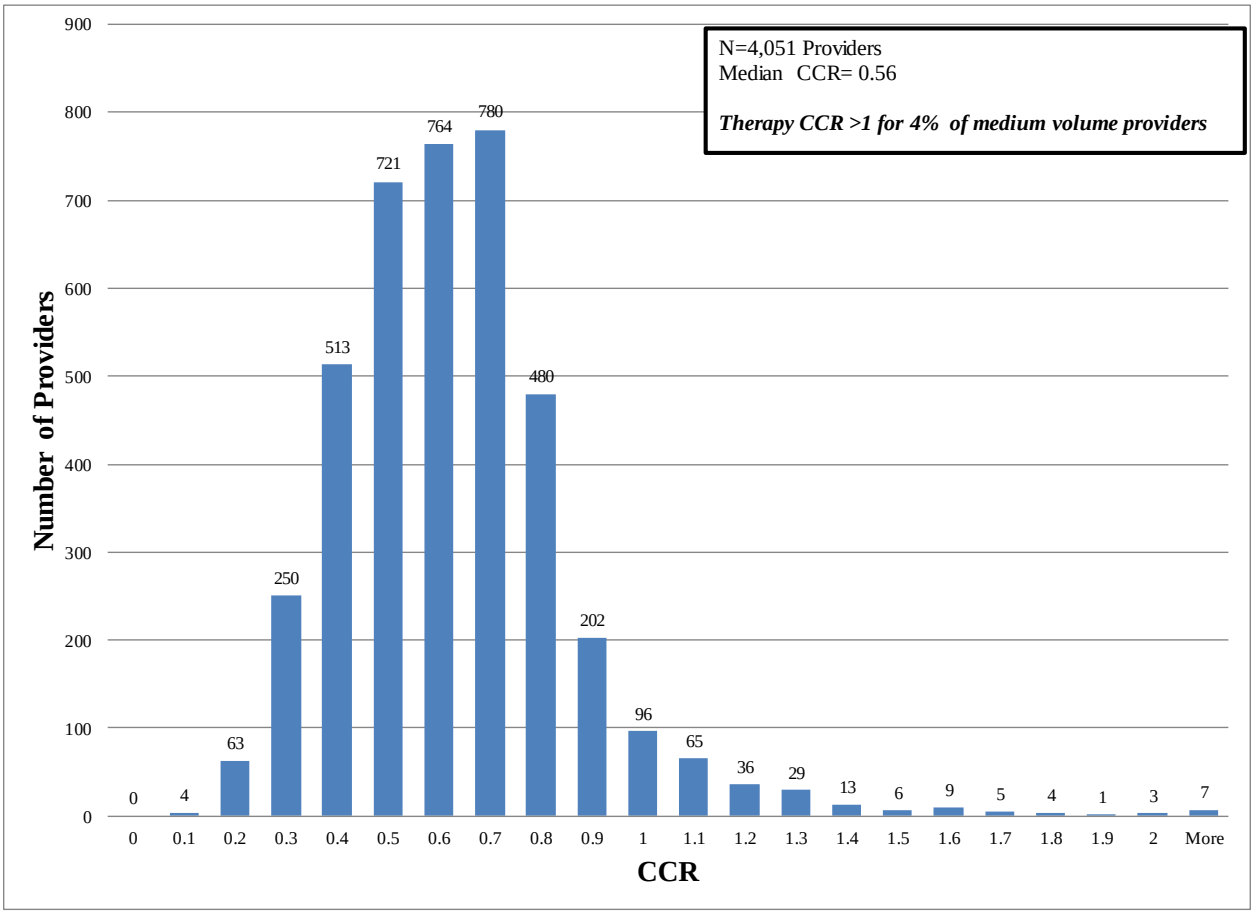
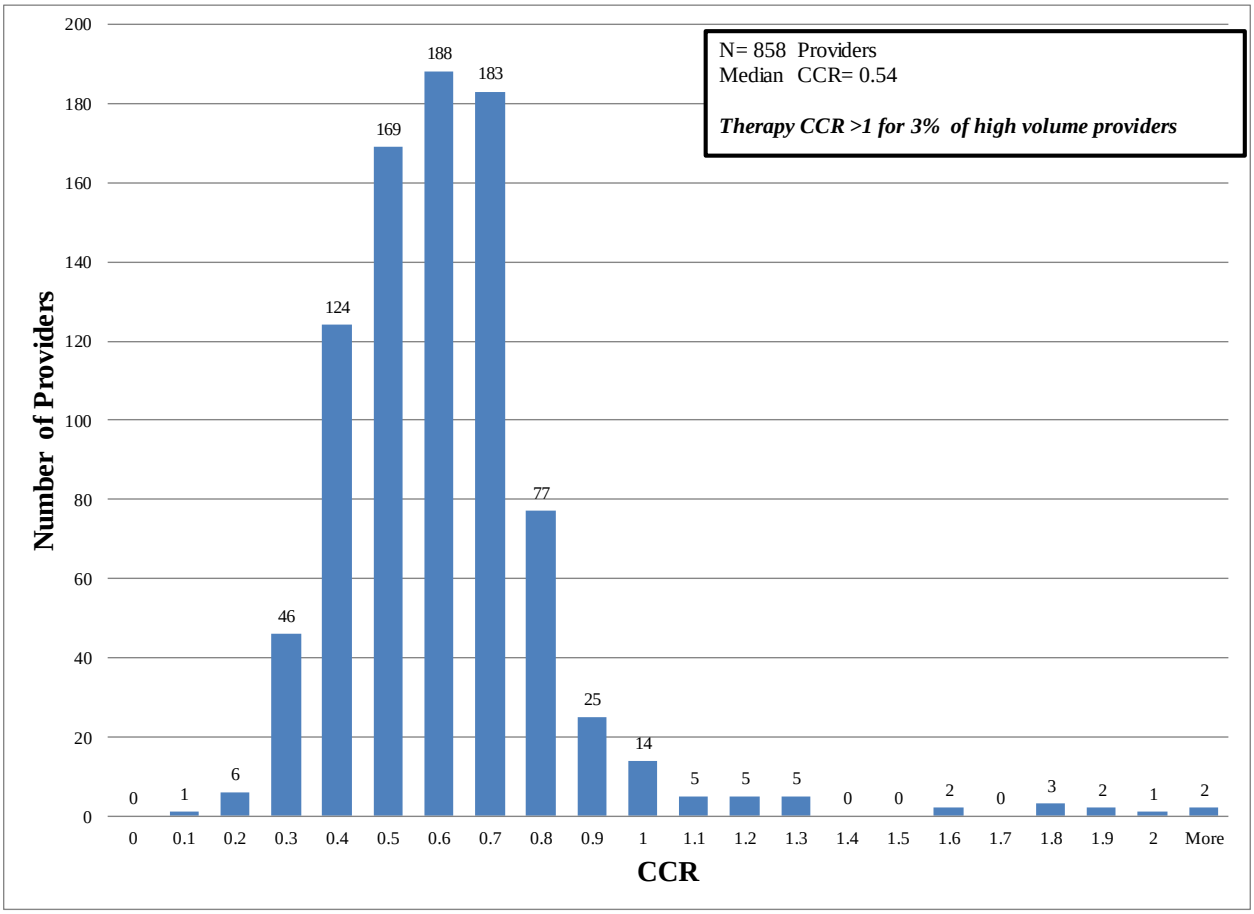


Figure 25: Distribution of Therapy CCR in <u>High Volume Providers</u> as Reported on CY 2013 SNF Cost Reports



Attachment B

The Lewin Group Critique of STRIVE

The LEWIN GROUP®

Critique of STRIVE Sampling Methodology and Implications for the 2010 SNF NPRM

Final Report

Prepared for:

American Health Care Association & Alliance for Quality Nursing Home Care

June 30, 2009

The LEWIN GROUP®

Critique of STRIVE Sampling Methodology and Implications for the 2010 SNF NPRM

Final Report

Prepared for:

American Health Care Association & Alliance for Quality Nursing Home Care

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Nikolay Manolov
Brian Simonson

June 30, 2009

Table of Contents

List of Tables and Figures

I. INTRODUCTION

The Resource Utilization Group (RUG) is a classification system to group individuals with similar patterns of resource use based on factors such as physical and cognitive function, clinical characteristics. This form of classification system was developed as a solution to rising concerns about quality of care and costs at nursing homes. The Staff Time Resource Intensity Verification (STRIVE) project's data is used for updating the payments for Medicare skilled nursing facilities (SNF) and refine the existing RUG system.

STRIVE information provided important input into the 2010 SNF NPRM. For example, STRIVE data were used to refine RUG ADL splits, recast therapy payments, create a new RUG-66 systems, produce a RUG-66 day distribution across 60 million SNF days, create a budget neutrality adjustment and to support impact analysis. To the extent that STRIVE information is not accurate or cannot otherwise be imported into the 2007 SNF linked claims and assessment file the NPRM's results and methodology is not supportable.

This paper is divided into three major sections. First the discussion focuses on the STRIVE sampling design and the sample representativeness. After that the discussion turns to the precision of RUG-66 day distribution estimates. We conclude the paper with a section on the accuracy of estimating a RUGs-66 day distribution based on STRIVE data and a final discussion on the implications of STRIVE and RUGs-66 analyses as they relate to the NPRM's proposed MDS 3.0 and RUGs-66 implementation, as well as the possibility that the NPRM's impact analysis and budget-neutral assumptions may be flawed.

II. STRIVE SAMPLING DESIGN AND SAMPLE REPRESENTATIVENESS OF THE SNF MEDICARE UNIVERSE

In this section we discuss the STRIVE sampling design and how it can lead to potential bias. In addition, we also conduct several independent analyses to test the representativeness of the STRIVE data. These studies include a comparison of the distribution of RUGs-53 days between STRIVE and non-STRIVE states, a comparison of distribution of MDS characteristics between STRIVE states and national and non-STRIVE states and regressions designed to estimate the impact of being in a STRIVE state on per diem costs/charges both overall and within RUG category.

The discussion is divided into two main sections. In the first half we present a qualitative discussion on how the sampling protocol might lead to potential bias and inconsistency. The second part of the discussion is a quantitative analysis testing the representativeness of the STRIVE data (STRIVE 2007 and MDS 2007 data have been used for this purpose).

A. Survey Sampling Design and sample representativeness - a brief introduction

In the study of large populations like Medicare and Medicaid, it is not feasible to collect survey data for each and every case in the universe. Resorting to some sampling technique to get a small portion of the universe and use it to get an idea of the overall effects being studied is

frequently used. It is very important that the sample selected is representative of the universe. Cochran (1977)[1] presents methods to determine sample size. Using the sample size determination techniques, it can be shown that for a nationwide survey even a small portion (say about 0.001%) of the population can produce a representative sample and an estimate (of the parameter of interest in the study) with reasonable precision.

However an important criterion determining the "representativeness" of the sample is the sampling design. It has been widely discussed in sample survey literature that even a large sample might give incorrect answers if the survey sample is systematically biased. In practice sample selection is biased for three common reasons - first, self-selection by individuals or data units being investigated and second, sample selection decisions by analysts or data processors. Item response rates represent a third potential source of bias. The National Center for Education Statistics standards specifies, "*Any survey stage of data collection with a unit or item response rate less than 85 percent must be evaluated for the potential magnitude of nonresponse bias before the data or any analysis using the data may be released*". The sample survey literature indicates that voluntary response samples are biased since people with strong opinions or atypical institutions tend to respond[2][3]. A well known example of bias due to voluntary response and used as a popular example is the survey by Literary Digest in 1936 to find what proportion supported the presidential candidate Franklin Roosevelt and what proportion supported Alf Landon. The response from the survey showed a 57% support for Alf Landon. However history narrates something different - Franklin Roosevelt won the election with almost 60% support.

The STRIVE data have a sample of 205 facilities and 9721 cases - a reasonable sample size to conduct a study if there are no apparent bias issues. The Medicare portion of the sample though is just 2,052 cases (see **Exhibit 1** below). STRIVE uses the Medicare portion of the sample to refine the existing Resource Utilization Group (RUG) classification system.

Exhibit 1: Count and % of Medicare and Non-Medicare cases (actual sample) using STRIVE 2007 data

Medicare Flag : 0 = No; 1 = Yes	COUNT	PERCENT
0	7,669	78.89%
1	2,052*	21.11%
Overall	**9,721**	**100.00%**

* In practice this sample size is weighted down to 1381 cases.

In addition, the sampling technique used to collect the STRIVE data is heavily dependent on the voluntary participation and convenience sampling which can lead to potential bias. In STRIVE 14 states out of 50 states agreed to participate in the study as well as Washington DC for a total of 15 "state" participants. Even for the facilities sampled from the 15 states, only 40.9% of the

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1 Cochran, W.G. (1977). Sampling Techniques. 3rd Edition. John Wiley and Sons, New York.

2 Heckman, Joseph J. 1979. "Sample Selection Bias as a Specification Error." *Econometrica* 47:153–161.

3 Groves, Robert. 1989. *Survey Errors and Survey Costs*. New York: John Wiley.

facilities invited agreed to participate (refer to **Exhibit 6** below taken from STRIVE TEP presentation). Thus, on the face of the criterion by The National Center for Education Statistics stated above, the STRIVE sample could have a very large and unknown sampling bias.

B. Comparison of the STRIVE sample to other PPS recalibration and refinement efforts

While patient categorization systems are often developed on samples (for example, PPS DRG weights were initially developed on over a million cases), PPS systems' updates are typically conducted on universe data (see **Exhibit 2**). The update of RUGs, based on 2052 cases (which as we note later are down-weighted to 1380 case) is totally out of alignment with the precision associated with the use of universe data in other PPS systems. This, as much as anything else speaks to a basic flaw in the use of a RUGs system based on nursing minutes to support SNF IPPS.

Exhibit 2: Number of facilities and case observations used to update case weights by setting

Setting	No. of Facilities	No. of Observations
SNF	206	9,791 (2,052 Medicare cases out of 9,791)
Home Health	9,227	98M (approximately)
IRF	1,200	369,000
IPPS	3,000	5M (approximately)
LTCH	400	130,160

Source: Report to Congress MEDPAC March 2009

C. STRIVE Sampling Design Critique - chance of potential bias as reflected in the eleven (11) step STRIVE sampling plan

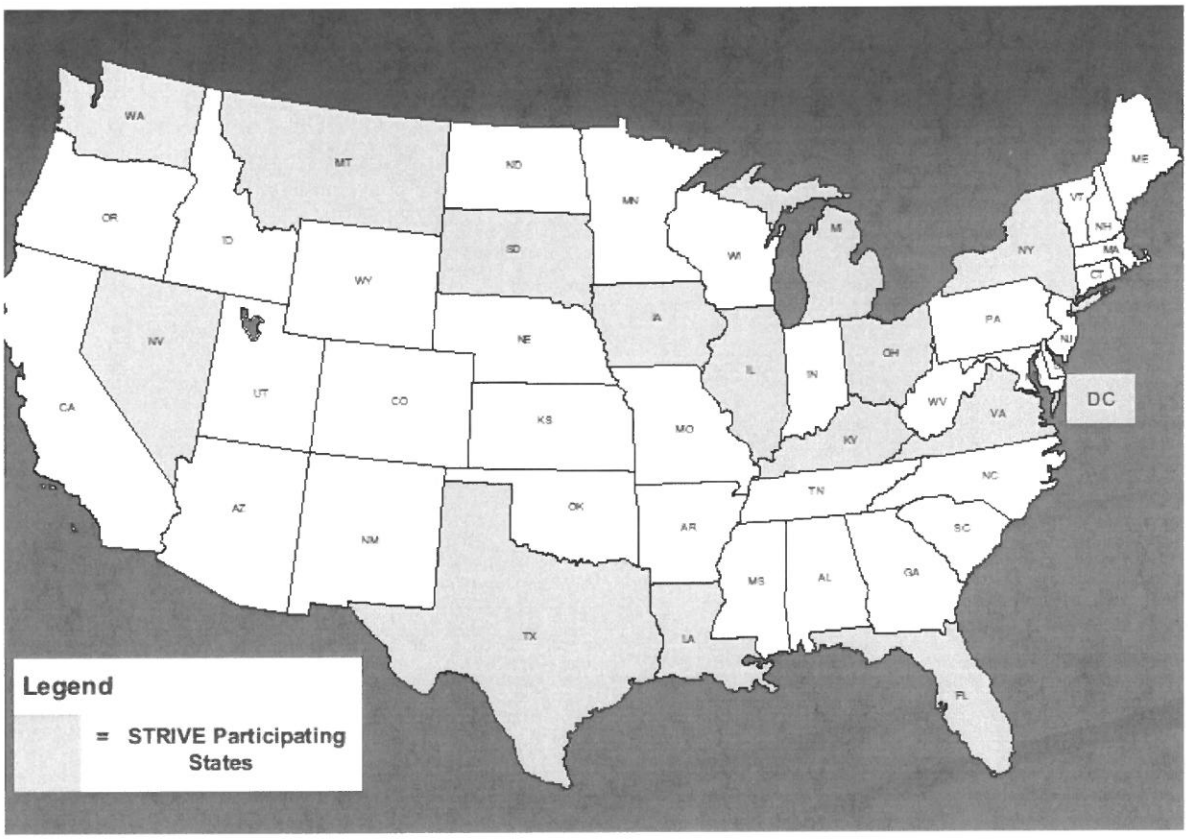
In this section we present a discussion on how the STRIVE sampling protocol resorts to voluntary and convenience sampling which might lead to potential bias. The sampling method used to collect the STRIVE data follows an eleven step sampling protocol (see Appendix A for STRIVE sample protocol) for a three stage cluster sampling with stratification. Of the eleven steps, four may pose potential problems for representativeness and sampling bias. The four "problem" steps are addressed below.

Step 2 – "Identified 15 states that agreed to participate" –

In this STRIVE sampling stage a subsample of states from the 50 states (plus District of Columbia) is selected. The sampling here is dependent on voluntary participation by states. This raises the chance of potential bias. It can also be seen that most of the mountain, mid west and New England states, California were not involved in the study (refer to **Exhibit 3** showing the STRIVE states below). These omissions reflect obvious problems with representativeness.

Another factor to consider is the operating characteristics of the facilities in the STRIVE states. A key question is "do these states' facilities operating characteristics represent those in all remaining states?" For example, do the characteristics of facilities in STRIVE participating states represent the facility characteristics of non-STRIVE states such as California or Maine?

Exhibit 3: STRIVE states



Source: STRIVE TEP notes, March 11, 2009 (exact replication)

Step 4 – "Applied geographic restrictions for some states"

This Step 4 restriction was applied to only 4 states – Florida, Illinois, Louisiana and Texas. That is, for some states, due to travel convenience of data monitors, only facilities in close geographic proximity to the data monitors were selected. From **Exhibit 4** it can be seen that out of the 5930 statewide eligible facilities, 1153 (approximately 19%) facilities in the 4 states were outside the favored geographic study area. The geographic restrictions were imposed for travel and budget restrictions and the states *"agreed to participate but only if the study area was restricted to certain sections of the state"*. It can be observed that there are two factors playing part in the sample selection process and the potential bias problem. The first being the study area was chosen by the state (self selection by individuals or data units being investigated).The second factor is due to facility difference by geographic region. For instance in Florida, for the Miami greater metropolitan region, there are more and perhaps different types of urban facilities than in the Jacksonville greater metropolitan region, or for Illinois, the nature of facilities in the Chicago metropolitan area might be different from the Champaign metropolitan region or rural areas of the state.

Exhibit 4: Count of eligible facilities in the 15 STRIVE states study area

Facility Sample Fulfillment

Population Group	Facilities	Percent of Total
Certified facilities -15 states	6,493	100.0%
Data exclusions (poor quality)	563	8.7%
Statewide eligible	5,930	91.3%
Facilities outside of geographic study areas (FL, IL, LA, TX)	1,153	17.8%
Eligible facilities in study areas	4,777	73.6%

Source: STRIVE TEP notes, March 11, 2009 (exact replication)

Step 6 – "Targets were based on …. Number of facilities the data monitors were able to visit … "

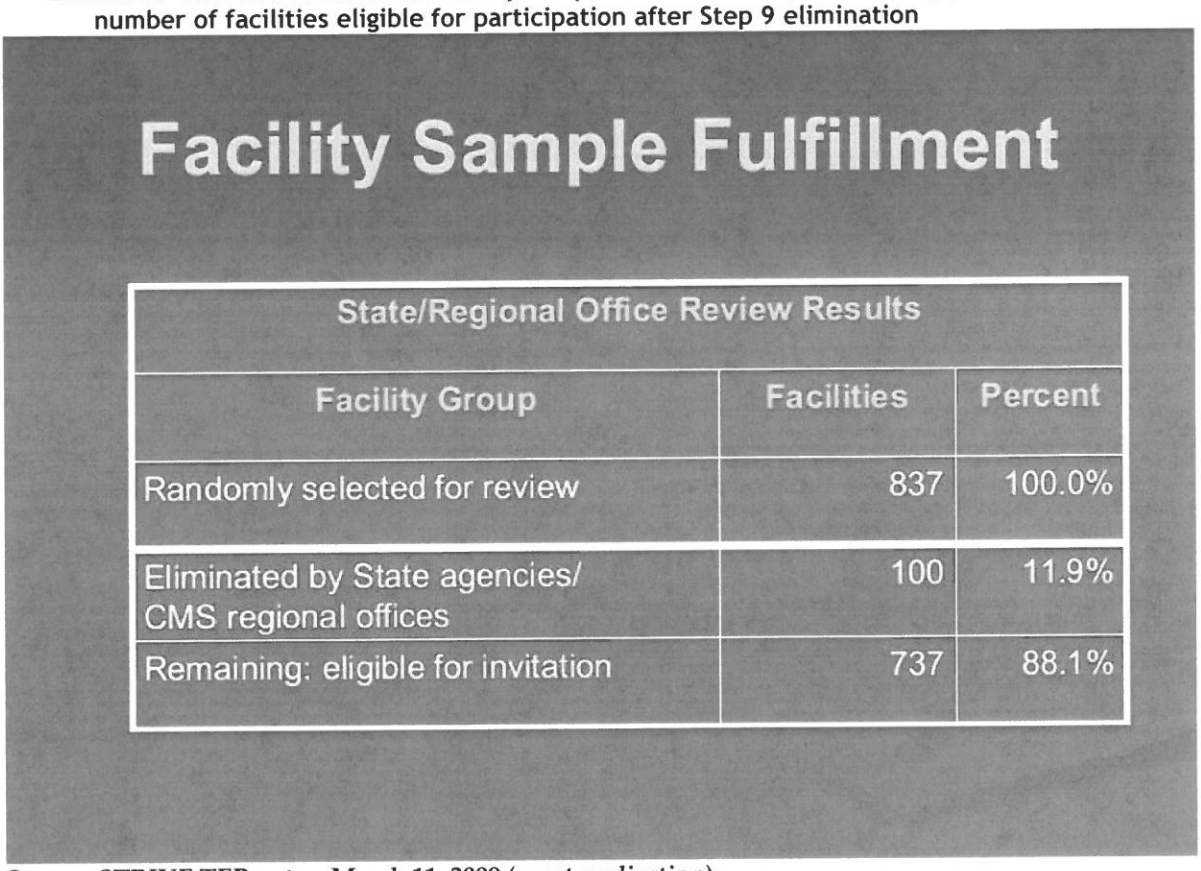
This indicates that the sample size was driven by how many facilities could be visited. This type of "convenience sampling" can also lead to potential bias.

*Step 10 – "until enough facilities **agreed** to participate"*

Voluntary sampling again plays a role here in Step 10. The sample is dependent on facility participation. There can be multiple reasons a facility might or might not agree to participate – funding and staff availability. If these types of characteristics are at play then the facility representativeness can be questioned. From **Exhibit 5** it can be seen that out of the 4,777 eligible facilities (after exclusions in Step 3 and geographic restrictions in Step 4 of the sampling plan) 837 facilities were sampled. The 837 sampled facilities went through another screening (Step 9) where 100 facilities were dropped. Out of the 737 eligible facilities, 523 were invited for participation. From **Exhibit 6**, it can be seen that out of the 523 facilities invited, 214 (almost 40%) agreed to participate and out of those 205 (39%) completed the process – showing a low

agreement rate or high non-response rate. This high non-response rate raises concerns that call for further investigation of representativeness of the overall sample. [4]

Exhibit 5: Number of facilities initially sampled in STRIVE Step 8 sampling protocol and number of facilities eligible for participation after Step 9 elimination



Facility Sample Fulfillment

State/Regional Office Review Results		
Facility Group	**Facilities**	**Percent**
Randomly selected for review	837	100.0%
Eliminated by State agencies/ CMS regional offices	100	11.9%
Remaining: eligible for invitation	737	88.1%

Source: STRIVE TEP notes, March 11, 2009 (exact replication)

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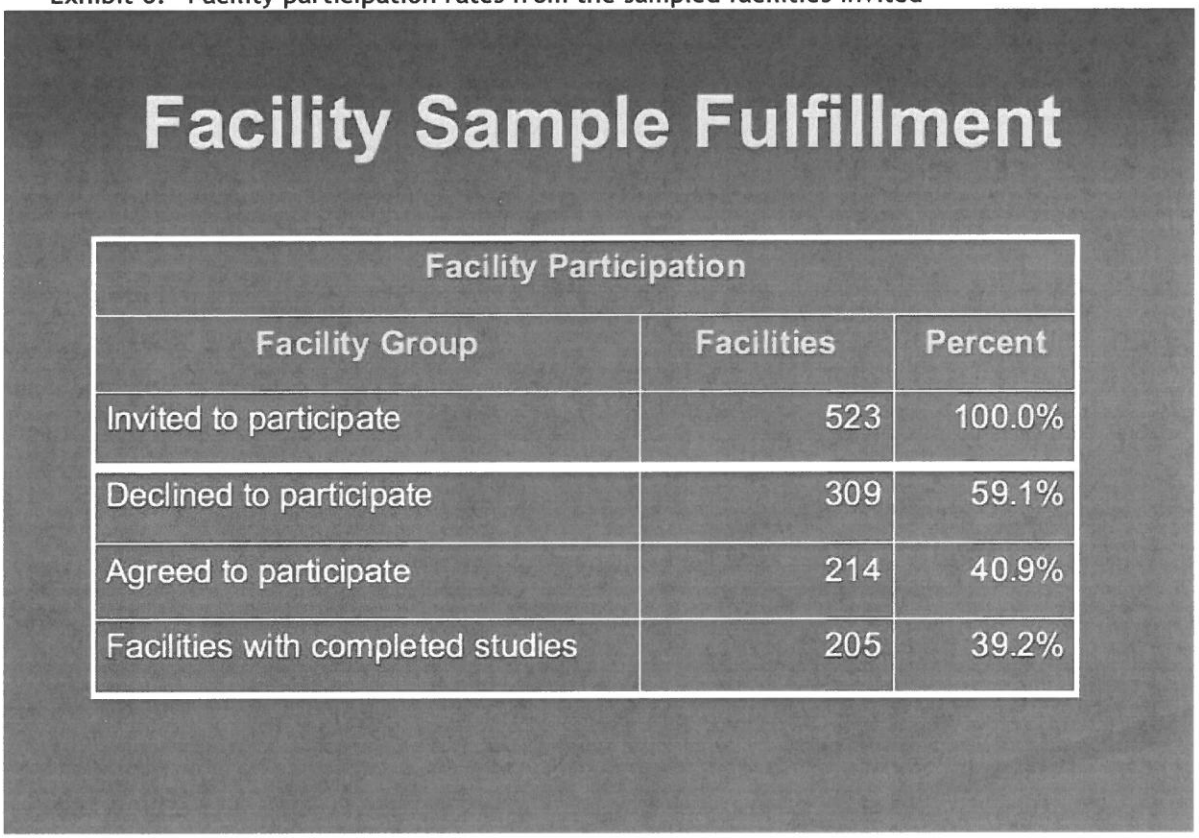
[4] 837 facilities were initially sampled (refer to Exhibit 5). Facilities were invited to participate "until enough facilities agreed". From Exhibit 5 and Exhibit 6 it can be seen that the process of inviting was stopped when 214 facilities agreed to participate (523 out of the 837 initially selected were invited). Hence it seems the target sample size was 214, however almost four times the required sample size was initially selected. One question raised – the high rejection rate and the underlying reasons for such behavior.

Exhibit 6: Facility participation rates from the sampled facilities invited



Facility Participation		
Facility Group	Facilities	Percent
Invited to participate	523	100.0%
Declined to participate	309	59.1%
Agreed to participate	214	40.9%
Facilities with completed studies	205	39.2%

Source: STRIVE TEP notes, March 11, 2009 (exact replication)

In addition to the detailed comments presented above on the 4 steps which could result in bias, we have 3 more concerns. First in the sampling process, there are 2 steps where facilities are dropped based on the quality of the facility – in Step 3 before the sample selection and then later in Step 9 after sample selection. The second concern is, that STRIVE may not capture a representative sample of 5 – 14 – 30 day etc. assessments. The sampling process selects a certain number of facilities within a stratum (strata are created based on the type of staffing pattern, cost structure, treatment provided and so on) for a state. All the cases for the facility are then the sample cases for STRIVE. This form of selection which does not explicitly call for examination of assessment type will not ensure an appropriate representation of the distribution of cases by assessment. This is problematic as long stay cases are different than short stay cases on many dimensions which is a reasonable assumption. Short stay patients tend to have higher case mix index and have higher cost per diem. The third concern is in Step 11 for some facilities that are too large, only a subsample of the facilities has been considered. The subsample (nursing units to be included in the study) was selected by the project staff in consultation with the nursing home management. The same selection logic was used for all large facilities. However it needs to be noted that the subsamples were not randomly selected and instead depend on the judgment of STRIVE project staff and nursing home management.

D. Appraising the STRIVE sample

This section presents a series of quantitative analyses for the representativeness of the STRIVE data. The STRIVE case data do not have any identifier for state, provider, or patient demographics. They also do not have an identifier for the day assessment type. Hence directly comparing the STRIVE data with similar MDS data for non-sampled facilities is impossible. However, as discussed before we have been able to conduct a variety of comparative analyses.

a) Comparison of STRIVE states and Non-STRIVE states on count of facilities, count of residents, percent of Medicare residents, urban-rural percentages and percent of multifacilities

Lewin received some key identifier variables from OSCAR data. This section presents some of the observations using these OSCAR data. **Exhibit 7** below provides a summary of the count of facilities, total residents, % of urban and rural facilities and percent of multi-facilities in each of the 51 states arranged in descending order of the number of facilities per state.

It can be observed that California has the largest number of facilities and is not a STRIVE participant. Florida has a comparatively large number of facilities and is also the state with the largest percent of Medicare resident (20%). However due to geographic restrictions only 4 facilities have been sampled from Florida. Another interesting factor that can be noticed is - CA, FL, MA, NJ, MD, RI have more than 90% of their facilities in urban region (for all other states the urban to rural ratio is about 70% to 30%). Except for FL, none of the states are STRIVE participants, and even for FL there are geographical restrictions and only 4 sampled facilities.

Exhibit 7: Summary results by state from OSCAR data

State (* indicates the STRIVE participating states)	From OSCAR Data							Number of sample facilities (from TEP presentation)
	Count of facilities	Total count of residents	% of Medicare residents	% of urban and rural facilities		Multi facility		
				urban	rural	% Yes	% No	
California	1,321	106,805	12.7%	96.4%	3.6%	51.9%	48.2%	
Texas *	1,273	94,693	13.9%	65.3%	34.7%	63.6%	36.5%	14
Ohio *	1,017	83,754	13.8%	72.9%	27.1%	60.0%	40.0%	20
Illinois *	834	78,863	13.5%	67.9%	32.1%	47.1%	52.9%	15
Pennsylvania	738	81,077	11.6%	79.3%	20.7%	52.7%	47.3%	
Florida *	693	72,548	19.6%	91.6%	8.4%	56.0%	44.0%	4
New York *	665	112,169	12.7%	85.0%	15.0%	12.9%	87.1%	21
Missouri	547	39,543	12.3%	57.2%	42.8%	48.6%	51.4%	
Indiana	537	40,981	15.3%	66.9%	33.1%	63.3%	36.7%	
Iowa *	478	27,579	6.4%	34.9%	65.1%	49.6%	50.4%	21
Massachusetts	459	45,107	13.5%	99.3%	0.7%	53.2%	46.8%	
Michigan *	449	42,256	16.5%	69.5%	30.5%	51.7%	48.3%	5
North Carolina	429	38,177	15.3%	60.1%	39.9%	67.8%	32.2%	

State (* indicates the STRIVE participating states)	From OSCAR Data							Number of sample facilities (from TEP presentation)
	Count of facilities	Total count of residents	% of Medicare residents	% of urban and rural facilities		Multi facility		
				urban	rural	% Yes	% No	
Wisconsin	411	33,847	13.2%	57.2%	42.8%	43.1%	56.9%	
Minnesota	402	32,131	10.0%	48.8%	51.2%	50.3%	49.8%	
Kansas	380	20,656	8.4%	36.1%	63.9%	50.0%	50.0%	
Oklahoma	379	22,193	10.6%	42.2%	57.8%	30.3%	69.7%	
New Jersey	370	46,178	17.1%	100.0%	0.0%	35.1%	64.9%	
Georgia	364	35,828	11.1%	61.3%	38.7%	72.3%	27.8%	
Tennessee	337	33,243	15.4%	58.8%	41.2%	60.5%	39.5%	
Louisiana *	307	27,677	11.0%	63.2%	36.8%	47.9%	52.1%	10
Kentucky *	299	23,827	15.2%	48.5%	51.5%	61.2%	38.8%	12
Virginia *	290	28,997	16.8%	71.4%	28.6%	68.6%	31.4%	17
Arkansas	264	19,245	10.9%	48.5%	51.5%	48.5%	51.5%	
Washington *	250	19,679	16.1%	79.6%	20.4%	60.8%	39.2%	15
Connecticut	245	27,279	15.7%	89.4%	10.6%	46.9%	53.1%	
Maryland	238	25,629	15.9%	91.6%	8.4%	54.2%	45.8%	
Alabama	235	23,580	13.5%	62.6%	37.4%	58.7%	41.3%	
Nebraska	232	13,614	10.2%	25.0%	75.0%	46.6%	53.5%	
Colorado	222	17,106	11.1%	71.2%	28.8%	59.0%	41.0%	
Mississippi	216	17,231	13.0%	31.0%	69.0%	43.5%	56.5%	
South Carolina	181	16,969	16.3%	70.7%	29.3%	71.3%	28.7%	
Oregon	141	8,240	12.9%	70.9%	29.1%	68.8%	31.2%	
Arizona	139	12,581	12.5%	84.9%	15.1%	59.0%	41.0%	
West Virginia	133	9,974	13.4%	45.9%	54.1%	46.6%	53.4%	
South Dakota *	114	6,696	7.3%	26.3%	73.7%	56.1%	43.9%	18
Maine	114	6,666	15.9%	46.5%	53.5%	54.4%	45.6%	
Utah	98	5,593	19.0%	82.7%	17.3%	64.3%	35.7%	
Montana *	97	5,282	10.3%	20.6%	79.4%	38.1%	61.9%	9
Rhode Island	90	8,195	8.9%	100.0%	0.0%	32.2%	67.8%	
New Hampshire	86	7,225	14.4%	53.5%	46.5%	48.8%	51.2%	
Idaho	84	4,827	15.5%	54.8%	45.2%	58.3%	41.7%	
North Dakota	83	5,922	7.4%	24.1%	75.9%	44.6%	55.4%	
New Mexico	76	6,194	11.0%	43.4%	56.6%	65.8%	34.2%	
Hawaii	51	3,980	9.0%	58.8%	41.2%	51.0%	49.0%	
Nevada *	48	4,715	13.9%	75.0%	25.0%	62.5%	37.5%	15
Delaware	47	4,022	15.5%	74.5%	25.5%	55.3%	44.7%	
Vermont	41	3,131	13.9%	19.5%	80.5%	41.5%	58.5%	
Wyoming	39	2,394	10.8%	20.5%	79.5%	38.5%	61.5%	

State (* indicates the STRIVE participating states)	From OSCAR Data							Number of sample facilities (from TEP presentation)
	Count of facilities	Total count of residents	% of Medicare residents	% of urban and rural facilities		Multi facility		
				urban	rural	% Yes	% No	
Washington D.C. *	20	2,807	10.6%	100.0%	0.0%	25.0%	75.0%	9
Alaska	15	627	10.7%	20.0%	80.0%	33.3%	66.7%	

b) STRIVE sample representativeness by Medicare and Non-Medicare cases

Lewin received a Medicare case identifier variable for STRIVE data. Using the Medicare case identifier variable it was determined that out of the 9721 cases, only 2052 cases are Medicare (approximately 21% - see **Exhibit 8**). STRIVE data do not have a provider identifier and hence it is not possible to check if the 21% is consistently represented across all providers, and know, for instance, if all the strata have Medicare sample cases. That is, from the variables available in the STRIVE data there is no way to identify how the Medicare cases are distributed - across states, strata (of selection), types of facilities. This would seem to be problematic in that we are asked to take it on faith that the Medicare sample is indeed representative.

The case weights for STRIVE represent the inverse of the probability of selection of a case scaled to the sample. The probability of selection for each facility is product of: A) Probability facility selected for initial list; B) Probability facility selected for inclusion in study; C) Probability each resident within facility included in study. Since the weights have been scaled to the sample size, Lewin checked to see if the projected number of cases in Medicare is close to the actual sample size. Using the case weights in STRIVE data, the Medicare portion of the data projects to 1381 (see **Exhibit 8** below) cases instead of 2052 (about a 30% reduction). Computationally this is a valid representation given the STRIVE sample (which maybe otherwise biased), since the case weights were developed on the overall sample. However, this indicates that the Medicare cases in the STRIVE 2007 data have been down weighted to reflect the fact that some Medicare cases were sampled with greater probability[5] than the overall sample. Any statistical projections or inferences using a survey data entail using the weights to appropriately project to the overall universe. It can be observed that the Medicare cases thus effectively represent 14% of the overall STRIVE cases. From **Exhibit 8** using MDS 2007 data it can be observed that Medicare cases comprise about 35% of all the cases. This finding is highly important when considering how the RUGs-66 day distribution was developed and used for impact analysis and budget neutrality calculations.

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[5] STRIVE over-sampled some high cost special population to construct a cost model for this population. These cases are down-weighted with the weighting process.

Exhibit 8: Count and % of Medicare and Non-Medicare cases (actual sample and weighted) using STRIVE 2007 and MDS 2007 data

Medicare Flag : 0 = No; 1 = Yes	Unweighted (actual STRIVE sample)		Weighted (using STRIVE case weights)		Using MDS 2007 data	
	COUNT	PERCENT	COUNT	PERCENT	COUNT	PERCENT
0	7,669	78.89%	8,421.50	85.91%	10,554,053	64.86%
1	2,052	21.11%	1,380.80	14.09%	5,719,114	35.14%
Overall	**9,721**	**100%**	**9,802.30**	**100%**	**16,273,167**	**100%**

c) *STRIVE sample by RUG category*

(i) Sample size by hierarchical RUG-53 and RUG-66 patient category

Exhibit 9 provides the sample size for the Medicare and all (Medicare and Non-Medicare) cases in each of RUGs-53 and RUGs-66 based on the STRIVE 2007 data. It can be seen that the sample sizes are widely disparate and some categories do not even have any samples and many categories have less than 30 cases (approximately 44 RUGs-66 categories have less than the 30 cases and 3 have no samples). Some RUG groups have less sample size even at the overall level (e.g. RLX, RLA, for RUG-53 grouper; RUX, RUL, RVX, RVL, RHX, RML for RUG-66 grouper). Thus making any statistical inference based on the sample would be theoretically less stable.

Exhibit 9: Count of Medicare and total cases in the STRIVE 2007 sample data by RUGs-53 (hierarchical grouper) and RUGs-66 (hierarchical grouper)

Count of cases by RUG 53 (hierarchy grouper)			Count of cases by RUG 66 (hierarchy grouper)		
RUG 53	Count of Medicare Cases	Overall Count in STRIVE data	RUG 66	Count of Medicare Cases	Overall Count in STRIVE data
RUX	64	79	RUX	4	8
RUL	142	155	RUL	2	2
RVX	53	65	RVX	6	10
RVL	137	164	RVL	9	11
RHX	82	120	RHX	8	11
RHL	45	60	RHL	15	17
RMX	63	102	RMX	12	21
RML	52	82	RML	10	13
RLX	3	4	RUC	31	46
RUC	58	70	RUB	31	41
RUB	170	194	RUA	25	30
RUA	38	47	RVC	84	101
RVC	49	65	RVB	117	130

Count of cases by RUG 53 (hierarchy grouper)			Count of cases by RUG 66 (hierarchy grouper)		
RUG 53	Count of Medicare Cases	Overall Count in STRIVE data	RUG 66	Count of Medicare Cases	Overall Count in STRIVE data
RVB	170	203	RVA	106	127
RVA	86	104	RHC	109	134
RHC	116	164	RHB	167	200
RHB	91	119	RHA	239	283
RHA	56	78	RMC	104	169
RMC	45	106	RMB	159	240
RMB	86	183	RMA	229	339
RMA	51	108	RLB	7	17
RLB	5	25	RLA	7	30
RLA	4	23	ES3	21	200
SE3	62	171	ES2	8	101
SE2	89	596	ES1	16	41
SE1	9	58	HE2	4	21
SSC	21	204	HE1	22	100
SSB	17	205	HD2	8	48
SSA	47	375	HD1	27	139
CC2	5	81	HC2	9	45
CC1	12	199	HC1	31	146
CB2	11	172	HB2	12	40
CB1	30	586	HB1	18	124
CA2	6	140	LE2	6	62
CA1	31	523	LE1	20	235
IB2		71	LD2	15	111
IB1	4	466	LD1	29	306
IA2		14	LC2	10	101
IA1	4	372	LC1	27	278
BB2		4	LB2	4	43
BB1		13	LB1	24	163
BA2		1	CE2	3	18
BA1		50	CE1	6	44
PE2		130	CD2	4	39
PE1	6	588	CD1	18	135
PD2	2	246	CC2	7	66
PD1	17	1051	CC1	14	206
PC2		26	CB2	3	34
PC1	2	121	CB1	15	94
PB2		20	CA2	7	85
PB1	4	195	CA1	48	366

Count of cases by RUG 53 (hierarchy grouper)		
RUG 53	Count of Medicare Cases	Overall Count in STRIVE data
PA2		38
PA1	6	671
BC1	1	14

Count of cases by RUG 66 (hierarchy grouper)		
RUG 66	Count of Medicare Cases	Overall Count in STRIVE data
BB2	1	101
BB1	13	527
BA2		34
BA1	14	598
PE2		37
PE1	2	225
PD2		94
PD1	15	469
PC2	1	160
PC1	39	757
PB2	1	67
PB1	26	390
PA2	1	51
PA1	21	825
AAA	1	14
Missing		1

(ii) Distribution of cases by index maximized RUG-53 categories - comparative analysis using STRIVE and MDS Medicare data for STRIVE and non-STRIVE states

STRIVE data do not have enough Medicare sample cases for all RUG groups for making reasonable inferences based on the sample(refer **to Exhibit 11** below). Only 17 out of the 53 RUGs have samples greater than 50. Six additional RUG groups have sample size greater than 30, however still less than 50 (Column I in Exhibit 11 identifies the RUGs which have STRIVE Medicare sample size less than 30[6]). These sample sizes are not consistent with precision in RUG weight estimation.

A test of difference in proportion of cases between the STRIVE and the Non-STRIVE states for each RUG based on the MDS Medicare data showed that for most RUGs, the proportion of cases is different (a comparison between column A and column B in exhibit 11, column D shows the RUGs that have significant difference). This indicates that the distribution of cases by RUG categories is different for the STRIVE and the Non-STRIVE states.

Even for the RUG categories that have sufficient sample size, it can be seen that the proportion of cases is different between the MDS and the STRIVE data. For example, consider the RUG

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6 Federal Register / Vol. 67, No. 56 / Friday, March 22, 2002 / Proposed Rules, pg. 13427, 42 CFR, Part 412 discusses for LTC–CMS–DRG model all DRG groups with less than 25 cases were grouped together.

category RML which has 130 cases in the STRIVE 2007 data. The STRIVE data has approximately 6% of the sample in this category. The projected proportion (using case weights) is only 4%. From the MDS data it can be seen that the RML RUG category has approximately 9% of Medicare cases in the STRIVE states. Consider RUG RHA as another example. STRIVE states (using MDS data) has 2.78% cases in this group. STRIVE sample has 2.73% cases, while projected STRIVE sample have 3.19% of cases.

Exhibit 10 below shows **some** of the RUG categories with sufficient Medicare sample cases in STRIVE data. However, the proportion of cases represented in the STRIVE data is different from the proportion in MDS data for STRIVE states. **Exhibit 11** lists **all** the 53 RUG groups (index maximized for the STRIVE 2007 data), the count of cases by each group (actual sample and weighted - Medicare and overall), % of cases by RUG group for STRIVE Medicare and Overall and MDS Medicare by STRIVE states and Non-Strive states.

It can be observed that even if overall STRIVE has a reasonable sample size of 9,721 cases - some RUG groups still do not have sufficient sample size (including Medicare and non-Medicare cases) (see for instances IA2, PB2, PC2, RLA, RLB, RLX).

This raises a concern regarding the state level representativeness of STRIVE data.

Exhibit 10: Example of RUG categories with sufficient STRIVE sample size, but different proportion of cases in comparison to MDS data and also in the projected (using STRIVE case weights)

	% cases using MDS Medicare data		STRIVE data sample (Medicare ONLY)		STRIVE Data weighted (Medicare ONLY)	
RUG	STRIVE States	Non-STRIVE States	Count	% of cases	Count	% of cases
RHA	2.78%	2.83%	56	2.73%	44.06	3.19%
RHB	4.59%	3.95%	91	4.43%	92.49	6.70%
RHC	6.35%	5.83%	116	5.65%	79.71	5.77%
RML	9.11%	8.87%	130	6.34%	54.02	3.91%
RMX	10.13%	10.35%	135	6.58%	83.22	6.03%
RVB	9.21%	9.41%	170	8.28%	93.26	6.75%

Exhibit 11: Comparative proportion of cases by RUG category using MDS and STRIVE data

RUG-53 (index max for STRIVE)	% cases using MDS Medicare				STRIVE data sample (Medicare ONLY)		STRIVE Data weighted (Medicare ONLY)			All STRIVE data sample		All STRIVE Data weighted	
	STRIVE States (A)	Non-STRIVE States (B)	Overall (C)	Ho : (A) = (B), vs. Ha: (A) not equal (B) significance indicator (D)	Count of cases (E)	% of cases (F)	Count of cases (G)	% of cases (H)	STRIVE Medicare sample < 30 indicator (I)	Count of cases (J)	% of cases (K)	Count of cases (L)	% of cases (M)
RUX	2.95%	3.16%	3.07%	Y	64	3.12%	36.9	2.67%		79	0.81%	42.1	0.43%
RUL	5.89%	5.49%	5.67%	Y	142	6.92%	63.3	4.58%		155	1.59%	67.9	0.69%
RVX	2.89%	3.24%	3.08%	Y	53	2.58%	31.1	2.25%		65	0.67%	34.6	0.35%
RVL	5.85%	6.05%	5.96%	Y	114	5.56%	63.2	4.58%		136	1.40%	71.3	0.73%
RHX				N/A	0	0.00%	0.0	0.00%	Y	0	0.00%	0.0	0.00%
RHL				N/A	0	0.00%	0.0	0.00%	Y	0	0.00%	0.0	0.00%
RMX	10.13%	10.35%	10.25%	Y	135	6.58%	83.2	6.03%		204	2.10%	113.5	1.16%
RML	9.11%	8.87%	8.98%	Y	130	6.34%	54.0	3.91%		188	1.93%	94.6	0.97%
RLX	0.04%	0.04%	0.04%		1	0.05%	0.3	0.02%	Y	2	0.02%	0.4	0.00%
RUC	2.46%	2.80%	2.65%	Y	58	2.83%	49.8	3.61%		70	0.72%	57.1	0.58%
RUB	7.85%	7.35%	7.58%	Y	170	8.28%	122.0	8.83%		194	2.00%	145.4	1.48%
RUA	2.67%	2.35%	2.49%	Y	38	1.85%	20.7	1.50%		47	0.48%	35.4	0.36%
RVC	2.45%	2.85%	2.67%	Y	49	2.39%	36.0	2.61%		65	0.67%	48.3	0.49%
RVB	9.21%	9.41%	9.32%	Y	170	8.28%	93.3	6.75%		203	2.09%	109.7	1.12%
RVA	3.75%	3.80%	3.78%	Y	86	4.19%	68.4	4.95%		104	1.07%	87.8	0.90%
RHC	6.35%	5.83%	6.06%	Y	116	5.65%	79.7	5.77%		164	1.69%	111.3	1.14%
RHB	4.59%	3.95%	4.24%	Y	91	4.43%	92.5	6.70%		119	1.22%	111.3	1.14%
RHA	2.78%	2.83%	2.81%	Y	56	2.73%	44.1	3.19%		78	0.80%	53.0	0.54%
RMC	2.17%	2.11%	2.14%	Y	45	2.19%	14.9	1.08%		106	1.09%	73.1	0.75%
RMB	3.30%	2.81%	3.03%	Y	86	4.19%	63.1	4.57%		183	1.88%	123.5	1.26%
RMA	1.65%	1.59%	1.62%	Y	51	2.49%	31.5	2.28%		108	1.11%	72.0	0.73%
RLB	0.08%	0.09%	0.09%		5	0.24%	2.6	0.19%	Y	25	0.26%	29.7	0.30%
RLA	0.09%	0.08%	0.08%		4	0.19%	7.3	0.53%	Y	23	0.24%	25.7	0.26%
SE3	2.17%	2.17%	2.17%		64	3.12%	40.9	2.96%		173	1.78%	130.3	1.33%
SE2	3.49%	3.50%	3.50%		89	4.34%	66.9	4.85%		596	6.13%	503.6	5.14%
SE1	0.19%	0.19%	0.19%		9	0.44%	3.7	0.27%	Y	58	0.60%	43.4	0.44%
SSC	0.83%	0.78%	0.80%	Y	21	1.02%	19.5	1.41%	Y	204	2.10%	262.5	2.68%
SSB	0.84%	0.84%	0.84%		17	0.83%	8.8	0.64%	Y	205	2.11%	216.0	2.20%
SSA	1.60%	1.77%	1.69%	Y	47	2.29%	24.5	1.77%		375	3.86%	281.0	2.87%
CC2	0.15%	0.17%	0.16%	Y	5	0.24%	0.9	0.07%	Y	81	0.83%	94.7	0.97%
CC1	0.42%	0.46%	0.44%	Y	12	0.58%	3.5	0.26%	Y	199	2.05%	245.4	2.50%
CB2	0.33%	0.40%	0.37%	Y	11	0.54%	7.2	0.52%	Y	172	1.77%	171.3	1.75%
CB1	1.05%	1.18%	1.12%	Y	30	1.46%	23.6	1.71%		586	6.03%	696.2	7.10%
CA2	0.32%	0.38%	0.35%	Y	6	0.29%	15.9	1.15%	Y	140	1.44%	124.9	1.27%
CA1	1.01%	1.19%	1.11%	Y	31	1.51%	37.6	2.72%		523	5.38%	486.2	4.96%

RUG-53 (index max for STRIVE)	% cases using MDS Medicare				STRIVE data sample (Medicare ONLY)		STRIVE Data weighted (Medicare ONLY)			All STRIVE data sample		All STRIVE Data weighted	
	STRIVE States (A)	Non-STRIVE States (B)	Overall (C)	Ho : (A) = (B), vs. Ha: (A) not equal (B) significance indicator (D)	Count of cases (E)	% of cases (F)	Count of cases (G)	% of cases (H)	STRIVE Medicare sample < 30 indicator (I)	Count of cases (J)	% of cases (K)	Count of cases (L)	% of cases (M)
IB2	0.02%	0.02%	0.02%	Y	0	0.00%	0.0	0.00%	Y	71	0.73%	164.7	1.68%
IB1	0.16%	0.23%	0.20%	Y	4	0.19%	20.3	1.47%	Y	466	4.79%	890.1	9.08%
IA2	0.01%	0.01%	0.01%		0	0.00%	0.0	0.00%	Y	14	0.14%	22.1	0.23%
IA1	0.14%	0.17%	0.15%	Y	4	0.19%	2.2	0.16%	Y	372	3.83%	388.2	3.96%
BB2	0.00%	0.00%	0.00%		0	0.00%	0.0	0.00%	Y	4	0.04%	6.8	0.07%
BB1	0.01%	0.01%	0.01%	Y	0	0.00%	0.0	0.00%	Y	13	0.13%	15.2	0.16%
BA2	0.00%	0.00%	0.00%	Y	0	0.00%	0.0	0.00%	Y	1	0.01%	0.2	0.00%
BA1	0.03%	0.03%	0.03%	Y	0	0.00%	0.0	0.00%	Y	50	0.51%	43.5	0.44%
PE2	0.03%	0.04%	0.03%	Y	0	0.00%	0.0	0.00%	Y	130	1.34%	249.1	2.54%
PE1	0.21%	0.32%	0.27%	Y	6	0.29%	3.5	0.26%	Y	588	6.05%	791.1	8.07%
PD2	0.05%	0.08%	0.07%	Y	2	0.10%	1.7	0.12%	Y	246	2.53%	439.3	4.48%
PD1	0.37%	0.57%	0.48%	Y	17	0.83%	22.2	1.61%	Y	1051	10.81%	1103.6	11.26%
PC2	0.01%	0.01%	0.01%	Y	0	0.00%	0.0	0.00%	Y	26	0.27%	44.0	0.45%
PC1	0.06%	0.08%	0.07%	Y	2	0.10%	0.4	0.03%	Y	121	1.24%	158.2	1.61%
PB2	0.01%	0.01%	0.01%	Y	0	0.00%	0.0	0.00%	Y	20	0.21%	20.6	0.21%
PB1	0.07%	0.09%	0.08%	Y	4	0.19%	2.2	0.16%	Y	195	2.01%	221.0	2.25%
PA2	0.01%	0.01%	0.01%	Y	0	0.00%	0.0	0.00%	Y	38	0.39%	49.9	0.51%
PA1	0.16%	0.23%	0.20%	Y	6	0.29%	1.4	0.10%	Y	671	6.90%	395.1	4.03%
BC1				N/A	1	0.05%	16.0	1.16%	Y	14	0.14%	36.6	0.37%

From **Exhibit 11** it can be seen that the STRIVE Medicare sample did not exist for some of the RUGs-53 categories. For those groups where the sample size is small, less than 30, even less than 10 we have concerns about precision.

d) Comparative study of behavioral and clinical patterns between STRIVE Medicare and STRIVE non-Medicare groups and MDS Medicare cases

Another quantitative analysis that has been performed compares MDS characteristic variables in the STRIVE data, to MDS estimates for Strive states and at national level. STRIVE data (all cases including Medicare and Non-Medicare) has case-weights based on the complete data. The nursing weights are also computed using all the cases. Hence analysis was done to test for similarity of behavioral and clinical characteristics between the Medicare and the Non-Medicare cohorts in STRIVE. A comparative analysis was also done to check if the characteristic pattern for the STRIVE Medicare cohort is similar to the Medicare universe (from MDS data – by

STRIVE states, Non-STRIVE states and overall). The Iowa Care Foundation has presented such a comparative study for selected characteristics. Lewin has run tests for all the characteristics (like ADLs, Cognitive patterns, Communication/Hearing patterns, diseases and likewise) that are available both in the STRIVE and the MDS data. We present some of the results in the tables and figures below. These results were determined using MDS 2007 and STRIVE 2007 data.

Exhibit 12 - 35 shows the results for response to some (12 characteristics) behavioral characteristics in MDS (Medicare) and STRIVE data. We note that for STRIVE, the response is different for the two cohorts (Medicare and Non-Medicare) (compare columns A and B) - indicating a behavioral difference between the two groups for most characteristics. Also the response proportion for STRIVE Medicare cohort is different from the response proportion from MDS Medicare (compare columns A and C). For most behavioral patterns, the distribution of responses for a characteristic is not different between the STRIVE states and the Non-STRIVE states when looking at the universe MDS data (compare columns C and D). Chi-square test for association between two categorical variables (row variable - characteristics and column variable-Medicare/Non-Medicare identifier) was performed for each of the characteristics on the STRIVE sample data. The tests showed that most behavioral patterns are dependent on whether a case is a Medicare or a Non-Medicare case. This supports the observations that the responses for the characteristics are different between the Medicare and non-Medicare cohorts in the STRIVE sample.

For example, in case of Self bed mobility (refer Exhibit 12 and 13) 36% of the STRIVE Medicare cases reported "Extensive Assistance" while for STRIVE Non-Medicare this figure is 28% and for MDS STRIVE states it is 45%. Consider the next ADL characteristics displayed - G1BA (how does a resident move between surfaces like bed and chair) (refer Exhibit 14 and 15). 4.4% of STRIVE Medicare cases reported independence while 18% of Non-Medicare STRIVE cases reported independence. From the MDS Medicare data for STRIVE states, 5.6% reported independence. Similar observations can be made for the different response levels of the variable.

Some characteristics like incidence of disease like Diabetes Mellitus are not dependent on if a case is Medicare or Non-Medicare (and chi-square test also indicated the same). However even for those variables, the incidence rates between the Medicare cohort and the Non-Medicare STRIVE cohorts are different. The incidence rate is also different between the STRIVE Medicare cohort and incidence rate for STRIVE states from MDS data (for example refer to exhibit 20 and 21).

This shows that Medicare and Non-Medicare cohorts have different behavioral and clinical patterns (in most cases). Also the difference in behavioral and clinical patterns between the STRIVE Medicare and MDS Medicare data raises a concern about the representativeness of the STRIVE sample data. This may suggest that the RUG weights based on the entire STRIVE sample may not reflect Medicare patients as much as Non-Medicare patients.

The behavioral patterns are not different for most cases between the STRIVE and the non-STRIVE states from the MDS Medicare data.

Exhibit 12: Comparative response for Self Bed mobility Performance (G1AA) between STRIVE Medicare and Non-Medicare (weighted), MDS Medicare STRIVE States and Non-STRIVE States and Overall Medicare (TABLE)

	STRIVE Medicare		STRIVE Non-Medicare		MDS (Medicare only) % of cases		
Self Bed mobility Performance (G1AA)	count of cases	% of cases (A)	count of cases	% of cases (B)	STRIVE states (C)	Non-STRIVE states (D)	All Medicare
0 : Independent	208.52	15.28%	2515.48	29.94%	12.12%	12.70%	12.44%
1 : Supervision	89.93	6.59%	522.40	6.22%	6.82%	5.68%	6.19%
2 : Limited Assistance	380.96	27.91%	1256.99	14.96%	24.72%	23.54%	24.06%
3 : Extensive Assistance	498.19	36.50%	2373.13	28.25%	45.11%	47.35%	46.35%
4 : Total Dependence	186.81	13.69%	1731.10	20.61%	11.19%	10.70%	10.92%
8 : Activity did not occur in the 7 day study	0.35	0.03%	1.85	0.02%	0.03%	0.02%	0.03%

Test Ho : Characteristics independent of Medicare/Non-Medicare (based on STRIVE data)	
Statistics	**Value**
Chi-Square	264.0088
DF for Chi-Square	5
P-value for Chi-Square	< 0.0001

Exhibit 13: Comparative response for Self Bed mobility Performance (G1AA) between STRIVE Medicare and Non-Medicare (weighted), MDS Medicare STRIVE States and Non-STRIVE States and Overall Medicare (GRAPH)

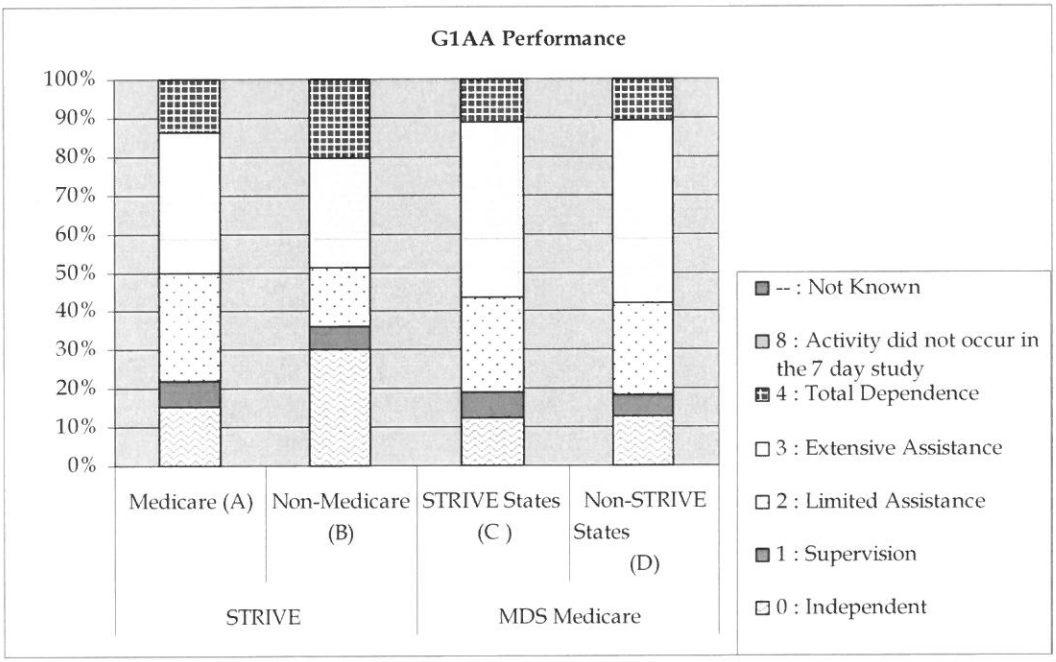


Exhibit 14: Comparative response for Transfer Self Performance (G1BA) between STRIVE Medicare and Non-Medicare (weighted), MDS Medicare STRIVE States and Non-STRIVE States and Overall Medicare (TABLE)

	STRIVE Medicare		STRIVE Non-Medicare		MDS (Medicare only) % of cases		
Transfer Self Performance (G1BA)	count of cases	% of cases (A)	count of cases	% of cases (B)	STRIVE states (C)	Non-STRIVE states (D)	All Medicare
0 : Independent	60.70	4.45%	1538.91	18.32%	5.58%	6.53%	6.10%
1 : Supervision	115.71	8.48%	486.29	5.79%	6.15%	5.72%	5.91%
2 : Limited Assistance	410.47	30.08%	1535.96	18.28%	25.67%	25.51%	25.58%
3 : Extensive Assistance	523.65	38.37%	2591.12	30.84%	45.67%	46.58%	46.17%
4 : Total Dependence	236.28	17.31%	2173.97	25.88%	15.96%	14.61%	15.21%
8 : Activity did not occur in the 7 day study	17.94	1.31%	74.70	0.89%	0.97%	1.05%	1.01%

Test Ho : Characteristics independent of Medicare/Non-Medicare (based on STRIVE data)	
Statistics	**Value**
Chi-Square	291.5956
DF for Chi-Square	5
P-value for Chi-Square	< 0.0001

Exhibit 15: Comparative response for Transfer Self Performance (G1BA) between STRIVE Medicare and Non-Medicare (weighted), MDS Medicare STRIVE States and Non-STRIVE States and Overall Medicare (GRAPH)

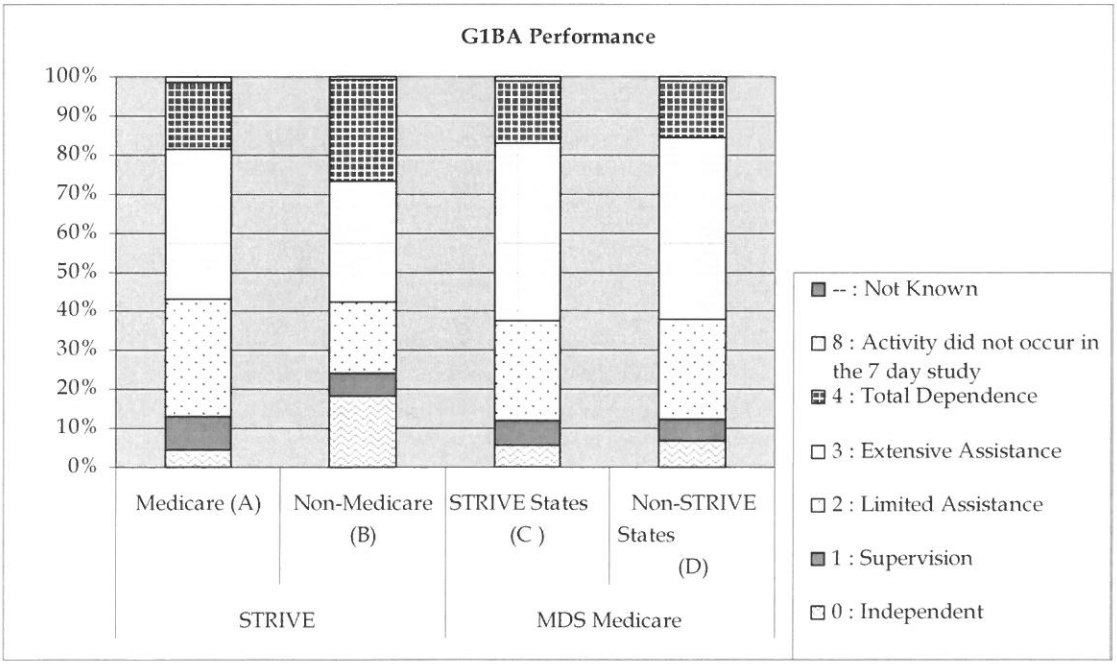


Exhibit 16: Comparative response for Eating Self Performance (G1HA) between STRIVE Medicare and Non-Medicare (weighted), MDS Medicare STRIVE States and Non-STRIVE States and Overall Medicare (TABLE)

	STRIVE Medicare		STRIVE Non-Medicare		MDS (Medicare only) % of cases		
Eating Self Performance (G1HA)	count of cases	% of cases (A)	count of cases	% of cases (B)	STRIVE states (C)	Non-STRIVE states (D)	All Medicare
0 : Independent	651.85	47.76%	2904.40	34.57%	43.99%	46.81%	45.55%
1 : Supervision	366.44	26.85%	2081.74	24.78%	26.35%	22.64%	24.29%
2 : Limited Assistance	133.20	9.76%	912.45	10.86%	10.60%	11.26%	10.96%
3 : Extensive Assistance	74.73	5.48%	944.37	11.24%	8.52%	9.86%	9.26%
4 : Total Dependence	138.24	10.13%	1557.27	18.54%	10.41%	9.26%	9.77%
8 : Activity did not occur in the 7 day study	0.30	0.02%	0.72	0.01%	0.13%	0.16%	0.14%

Test Ho : Characteristics independent of Medicare/Non-Medicare (based on STRIVE data)	
Statistics	**Value**
Chi-Square	144.8189
DF for Chi-Square	5
P-value for Chi-Square	< 0.0001

Exhibit 17: Comparative response for Eating Self Performance (G1HA) between STRIVE Medicare and Non-Medicare (weighted), MDS Medicare STRIVE States and Non-STRIVE States and Overall Medicare (GRAPH)

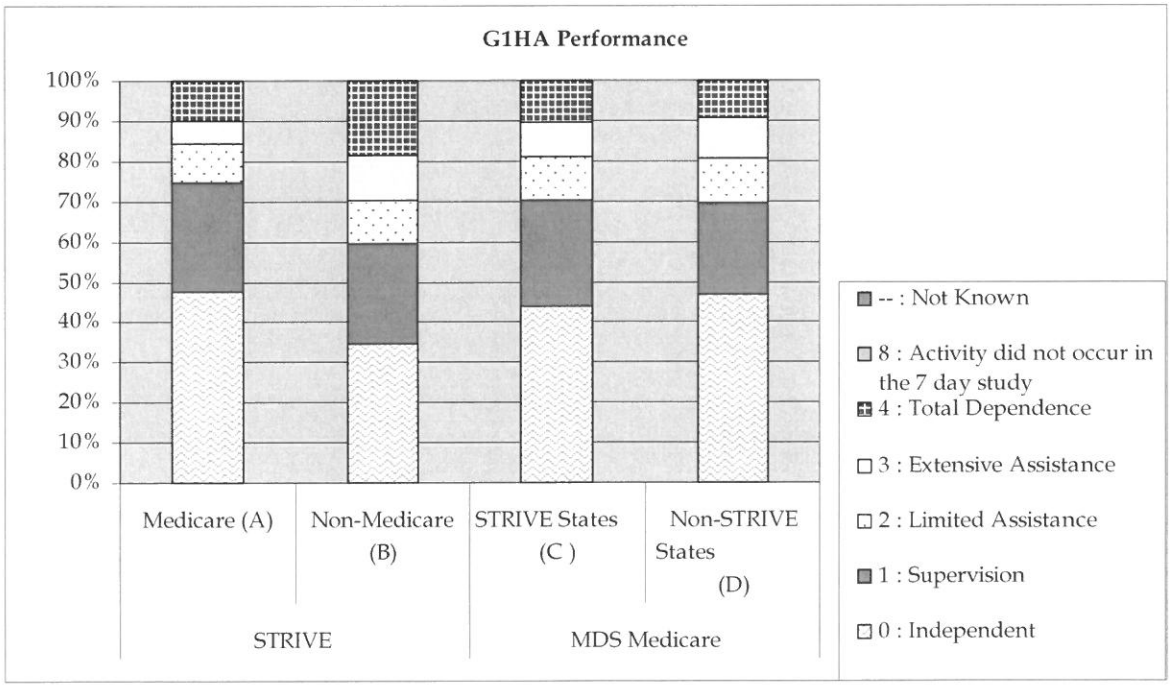


Exhibit 18: Comparative response for Toilet Use Self Performance (G1IA) between STRIVE Medicare and Non-Medicare (weighted), MDS Medicare STRIVE States and Non-STRIVE States and Overall Medicare (TABLE)

	STRIVE Medicare		STRIVE Non-Medicare		MDS (Medicare only) % of cases		
Toilet Use Self Performance (G1IA)	count of cases	% of cases (A)	count of cases	% of cases (B)	STRIVE states (C)	Non-STRIVE states (D)	All Medicare
0 : Independent	70.17	5.14%	977.58	11.64%	5.10%	5.81%	5.49%
1 : Supervision	104.28	7.64%	345.91	4.12%	5.15%	4.76%	4.94%
2 : Limited Assistance	324.43	23.77%	1224.01	14.57%	21.97%	21.66%	21.80%
3 : Extensive Assistance	531.50	38.94%	2806.28	33.40%	45.89%	47.33%	46.69%
4 : Total Dependence	334.37	24.50%	2846.71	33.89%	21.74%	20.28%	20.93%
8 : Activity did not occur in the 7 day study	0.00	0.00%	200.46	2.39%	0.15%	0.13%	0.14%

Test Ho : Characteristics independent of Medicare/Non-Medicare (based on STRIVE data)	
Statistics	Value
Chi-Square	215.3271
DF for Chi-Square	5
P-value for Chi-Square	< 0.0001

Exhibit 19: Comparative response for Toilet Use Self Performance (G1IA) between STRIVE Medicare and Non-Medicare (weighted), MDS Medicare STRIVE States and Non-STRIVE States and Overall Medicare (GRAPH)

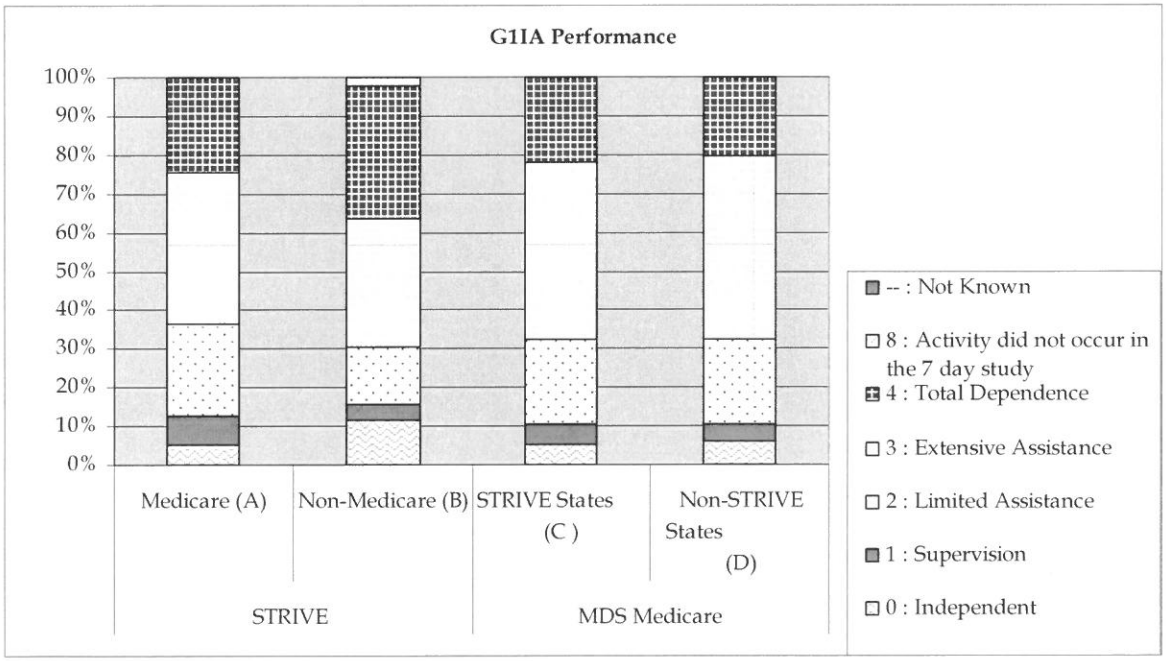


Exhibit 20: Comparative response for Diabetes Mellitus (I1A) between STRIVE Medicare and Non-Medicare (weighted), MDS Medicare STRIVE States and Non-STRIVE States and Overall Medicare

	STRIVE Medicare		STRIVE Non-Medicare		MDS (Medicare only) % of cases		
Diabetes Mellitus (I1A)	count of cases	% of cases (A)	count of cases	% of cases (B)	STRIVE states (C)	Non-STRIVE states (D)	All Medicare
-1 : Unable to Determine	0.67	0.05%	0.67	0.01%	0.05%	0.05%	0.05%
0 : No	931.71	67.48%	5892.77	69.99%	64.10%	64.89%	64.54%
1 : Yes	448.42	32.48%	2526.40	30.01%	35.85%	35.06%	35.41%

Test Ho : Characteristics independent of Medicare/Non-Medicare (based on STRIVE data)

Statistics	Value
Chi-Square	4.8758
DF for Chi-Square	2
P-value for Chi-Square	0.0873

Exhibit 21: Comparative response for Diabetes Mellitus (I1A) between STRIVE Medicare and Non-Medicare (weighted), MDS Medicare STRIVE States and Non-STRIVE States and Overall Medicare (GRAPH)

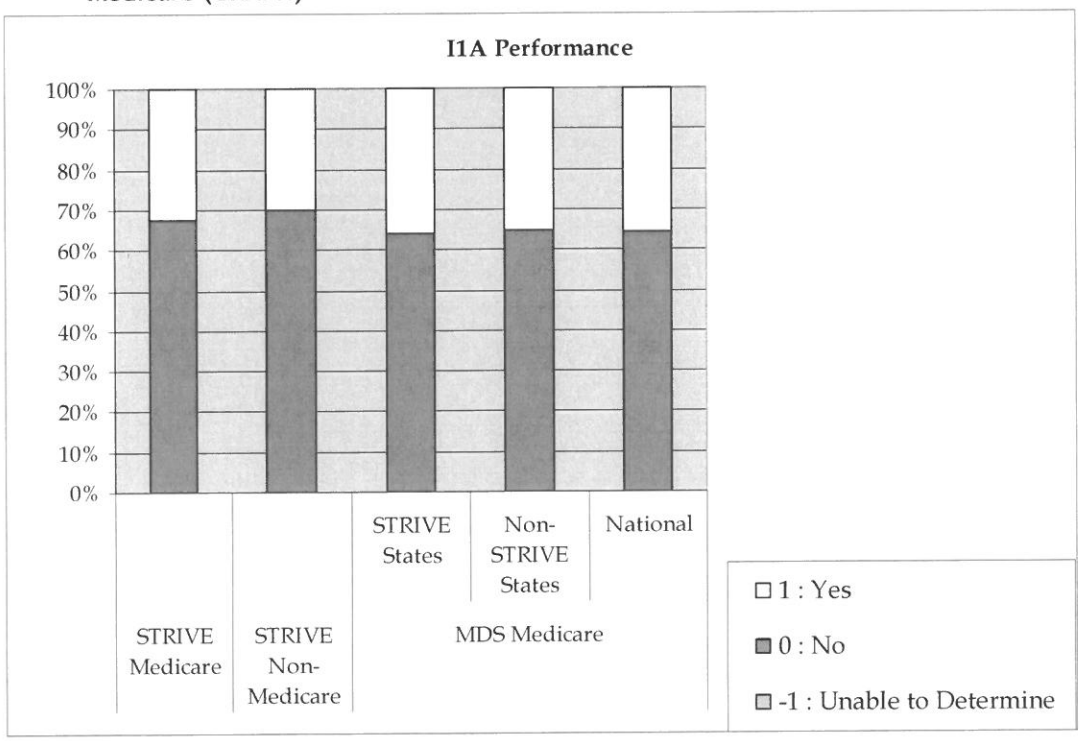


Exhibit 22: Comparative response for Parenteral IV (K5A) between STRIVE Medicare and Non-Medicare (weighted), MDS Medicare STRIVE States and Non-STRIVE States and Overall Medicare

	STRIVE Medicare		STRIVE Non-Medicare		MDS (Medicare only) % of cases		
Parenteral IV (K5A)	count of cases	% of cases (A)	count of cases	% of cases (B)	STRIVE states (C)	Non-STRIVE states (D)	All Medicare
-1 : Unable to Determine	1.73	0.13%	1.10	0.01%	0.37%	0.53%	0.46%
0 : No	1253.71	90.80%	8301.30	98.59%	91.94%	90.93%	91.38%
1 : Yes	125.35	9.08%	117.44	1.39%	7.69%	8.55%	8.16%

Test Ho : Characteristics independent of Medicare/Non-Medicare (based on STRIVE data)	
Statistics	**Value**
Chi-Square	295.2303
DF for Chi-Square	2
P-value for Chi-Square	< 0.0001

Exhibit 23: Comparative response for Parenteral IV (K5A) between STRIVE Medicare and Non-Medicare (weighted), MDS Medicare STRIVE States and Non-STRIVE States and Overall Medicare (GRAPH)

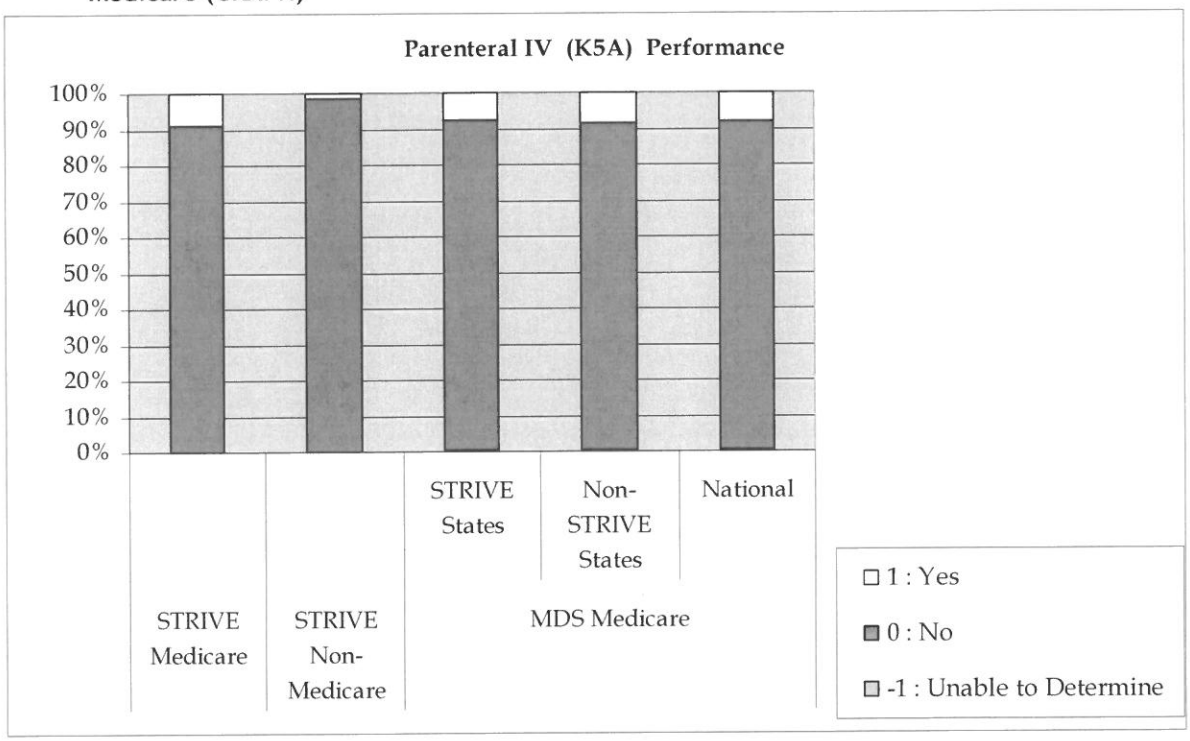


Exhibit 24: Comparative proportion of cases for Pressure ulcers (M2A) between STRIVE Medicare and Non-Medicare (weighted), MDS Medicare STRIVE States and Non-STRIVE States and Overall Medicare

	STRIVE Medicare		STRIVE Non-Medicare		MDS (Medicare only) % of cases		
Pressure Ulcers (M2A) - Stages	count of cases	% of cases (A)	count of cases	% of cases (B)	STRIVE states (C)	Non-STRIVE states (D)	All Medicare
0 : none	1102.39	80.78%	7742.17	92.14%	77.62%	77.93%	77.79%
1	39.93	2.93%	110.63	1.32%	5.67%	6.01%	5.86%
2	141.80	10.39%	282.33	3.36%	10.07%	10.17%	10.12%
3	16.56	1.21%	94.35	1.12%	1.82%	1.88%	1.85%
4	64.07	4.69%	172.94	2.06%	4.74%	4.00%	4.33%

Test Ho : Characteristics independent of Medicare/Non-Medicare (based on STRIVE data)	
Statistics	**Value**
Chi-Square	203.8108
DF for Chi-Square	4
P-value for Chi-Square	< 0.0001

Exhibit 25: Comparative proportion of cases for Pressure ulcers (M2A) between STRIVE Medicare and Non-Medicare (weighted), MDS Medicare STRIVE States and Non-STRIVE States and Overall Medicare (GRAPH)

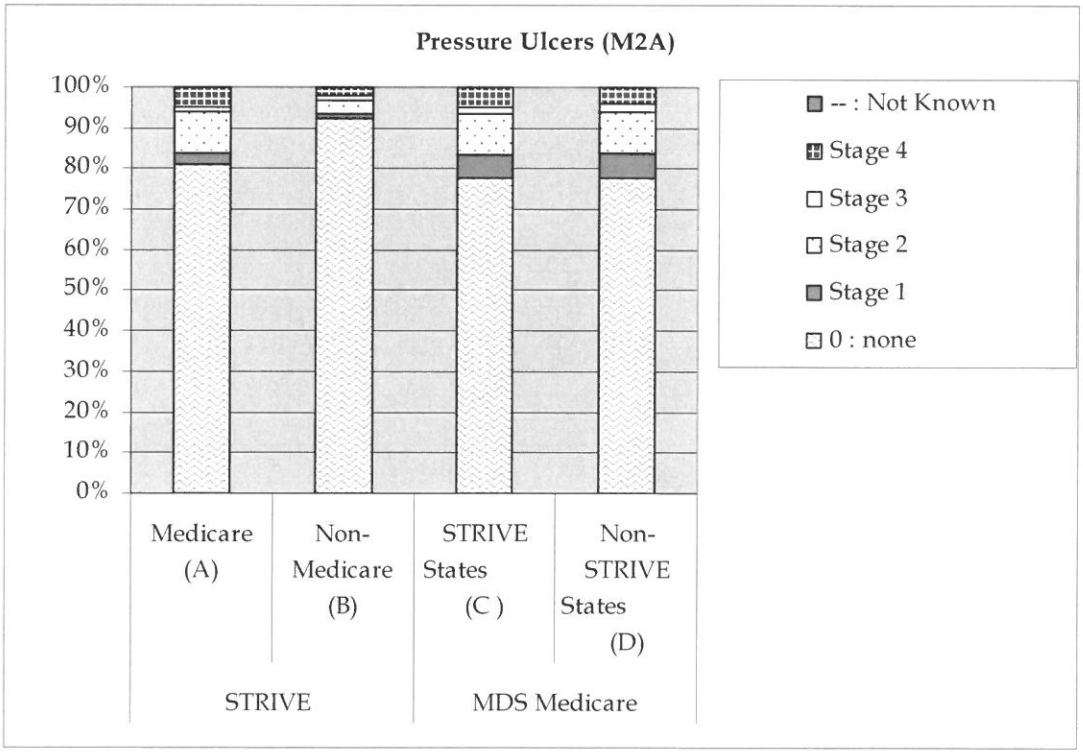


Exhibit 26: Comparative response for IV Medication (P1AC) between STRIVE Medicare and Non-Medicare (weighted), MDS Medicare STRIVE States and Non-STRIVE States and Overall Medicare

	STRIVE Medicare		STRIVE Non-Medicare		MDS (Medicare only) % of cases		
IV Medication (P1AC)	count of cases	% of cases (A)	count of cases	% of cases (B)	STRIVE states (C)	Non-STRIVE states (D)	All Medicare
-1 : Unable to Determine	0.95	0.07%	0.95	0.01%	0.01%	0.01%	0.01%
0 : No	935.92	67.78%	7875.06	93.53%	55.80%	54.99%	55.35%
1 : Yes	443.91	32.15%	543.83	6.46%	44.18%	44.99%	44.63%

Test Ho : Characteristics independent of Medicare/Non-Medicare (based on STRIVE data)	
Statistics	Value
Chi-Square	866.3351
DF for Chi-Square	2
P-value for Chi-Square	< 0.0001

Exhibit 27: Comparative response for IV Medication (P1AC) between STRIVE Medicare and Non-Medicare (weighted), MDS Medicare STRIVE States and Non-STRIVE States and Overall Medicare (GRAPH)

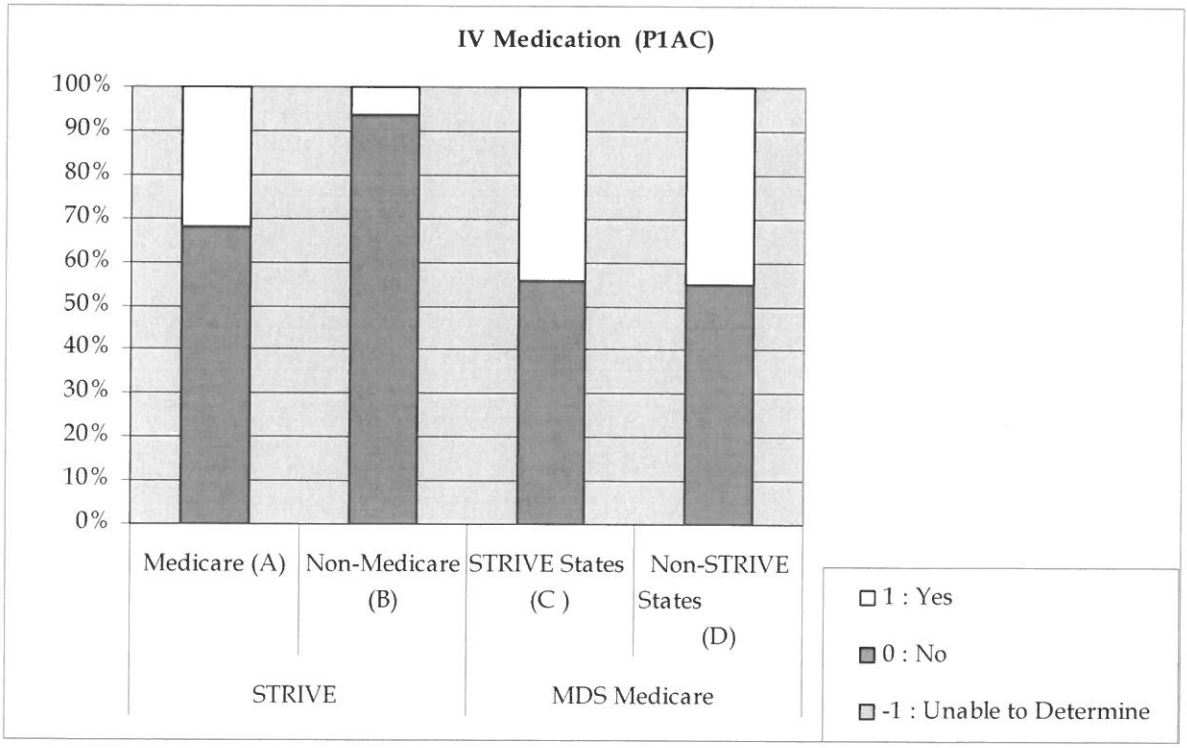


Exhibit 28: Comparative response for Oxygen Therapy (P1AG) between STRIVE Medicare and Non-Medicare (weighted), MDS Medicare STRIVE States and Non-STRIVE States and Overall Medicare

	STRIVE Medicare		STRIVE Non-Medicare		MDS (Medicare only) % of cases		
Oxygen Therapy (P1AG)	count of cases	% of cases (A)	count of cases	% of cases (B)	STRIVE states (C)	Non-STRIVE states (D)	All Medicare
-1 : Unable to Determine	0.95	0.07%	0.95	0.01%	0.01%	0.01%	0.01%
0 : No	1097.91	79.51%	7558.22	89.77%	70.76%	70.30%	70.50%
1 : Yes	281.92	20.42%	860.67	10.22%	29.23%	29.69%	29.49%

Test Ho : Characteristics independent of Medicare/Non-Medicare (based on STRIVE data)	
Statistics	**Value**
Chi-Square	121.9218
DF for Chi-Square	2
P-value for Chi-Square	< 0.0001

Exhibit 29: Comparative response for Oxygen Therapy (P1AG) between STRIVE Medicare and Non-Medicare (weighted), MDS Medicare STRIVE States and Non-STRIVE States and Overall Medicare (GRAPH)

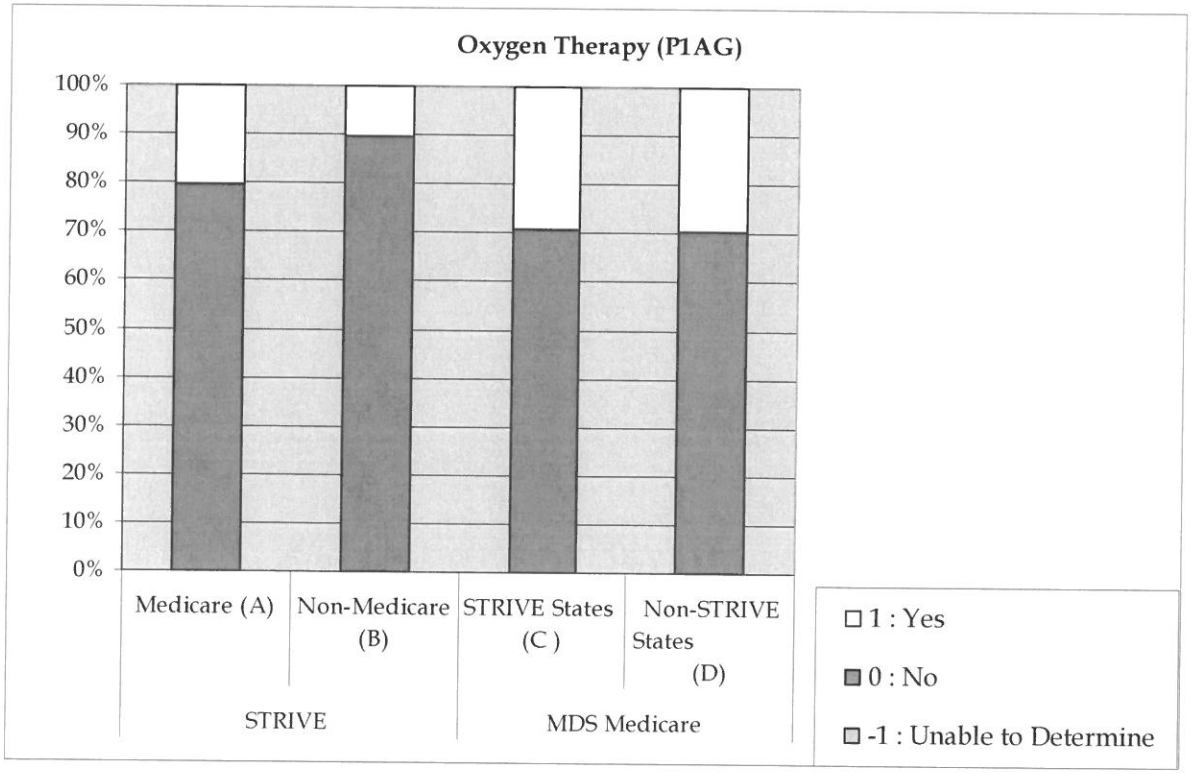


Exhibit 30: Comparative response for Short Term Memory (B2A) between STRIVE Medicare and Non-Medicare (weighted), MDS Medicare STRIVE States and Non-STRIVE States and Overall Medicare

	STRIVE Medicare		STRIVE Non-Medicare		MDS (Medicare only) % of cases		
Short Term Memory (B2A) (Memory OK = Seems to recall in 5 minutes)	count of cases	% of cases (A)	count of cases	% of cases (B)	STRIVE states (C)	Non-STRIVE states (D)	All Medicare
-2. Skip Pattern	17.78	1.29%	52.29	0.62%	0.00%	0.00%	0.00%
-1. Unable to determine	4.85	0.35%	21.31	0.25%	0.48%	0.52%	0.50%
0. Memory OK	638.14	46.22%	1690.84	20.08%	46.10%	46.54%	46.34%
1. Memory problem	720.02	52.15%	6655.40	79.04%	53.42%	52.95%	53.16%

Test Ho : Characteristics independent of Medicare/Non-Medicare (based on STRIVE data)	
Statistics	Value
Chi-Square	462.7912
DF for Chi-Square	3
P-value for Chi-Square	< 0.0001

Exhibit 31: Comparative response for Short Term Memory (B2A) between STRIVE Medicare and Non-Medicare (weighted), MDS Medicare STRIVE States and Non-STRIVE States and Overall Medicare (GRAPH)

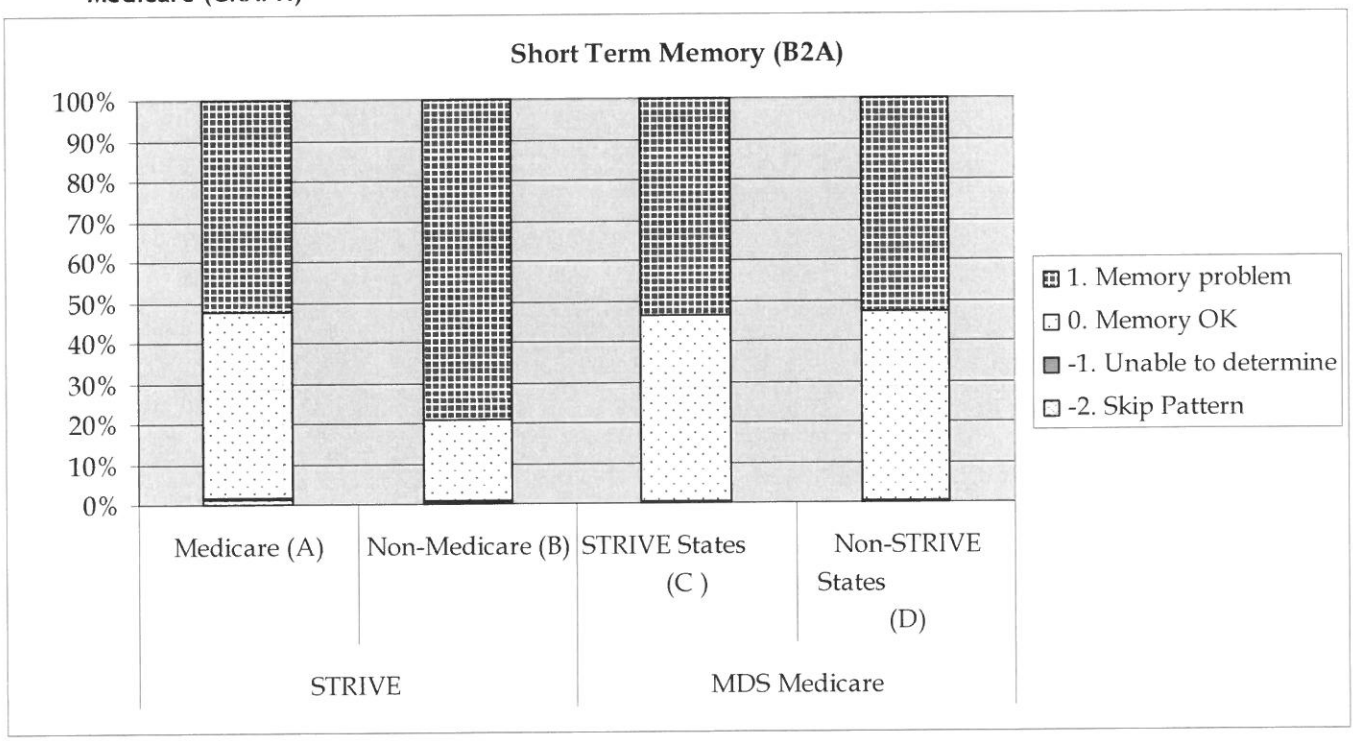


Exhibit 32: Comparative response for Independent Decision making (B4) between STRIVE Medicare and Non-Medicare (weighted), MDS Medicare STRIVE States and Non-STRIVE States and Overall Medicare

	STRIVE Medicare		STRIVE Non-Medicare		MDS (Medicare only) % of cases		
Cognitive Skills for independent decision making (B4)	count of cases	% of cases (A)	count of cases	% of cases (B)	STRIVE states (C)	Non-STRIVE states (D)	All Medicare
-2. Skip Pattern	17.78	1.29%	52.56	0.62%	0.00%	0.00%	0.00%
-1. Unable to determine	0.00	0.00%	0.26	0.00%	0.20%	0.13%	0.16%
0. INDEPENDENT	456.37	33.05%	1192.72	14.17%	37.60%	39.87%	38.85%
1. MODIFIED INDEPENDENCE	375.88	27.22%	1531.24	18.19%	25.60%	23.77%	24.58%
2. MODERATELY IMPAIRED	434.33	31.46%	3690.62	43.83%	29.42%	28.91%	29.14%
4. SEVERELY IMPAIRED	96.42	6.98%	1952.44	23.19%	7.18%	7.33%	7.26%

Test Ho : Characteristics independent of Medicare/Non-Medicare (based on STRIVE data)	
Statistics	**Value**
Chi-Square	500.7398
DF for Chi-Square	5
P-value for Chi-Square	< 0.0001

Exhibit 33: Comparative response for Independent Decision making (B4) between STRIVE Medicare and Non-Medicare (weighted), MDS Medicare STRIVE States and Non-STRIVE States and Overall Medicare (GRAPH)

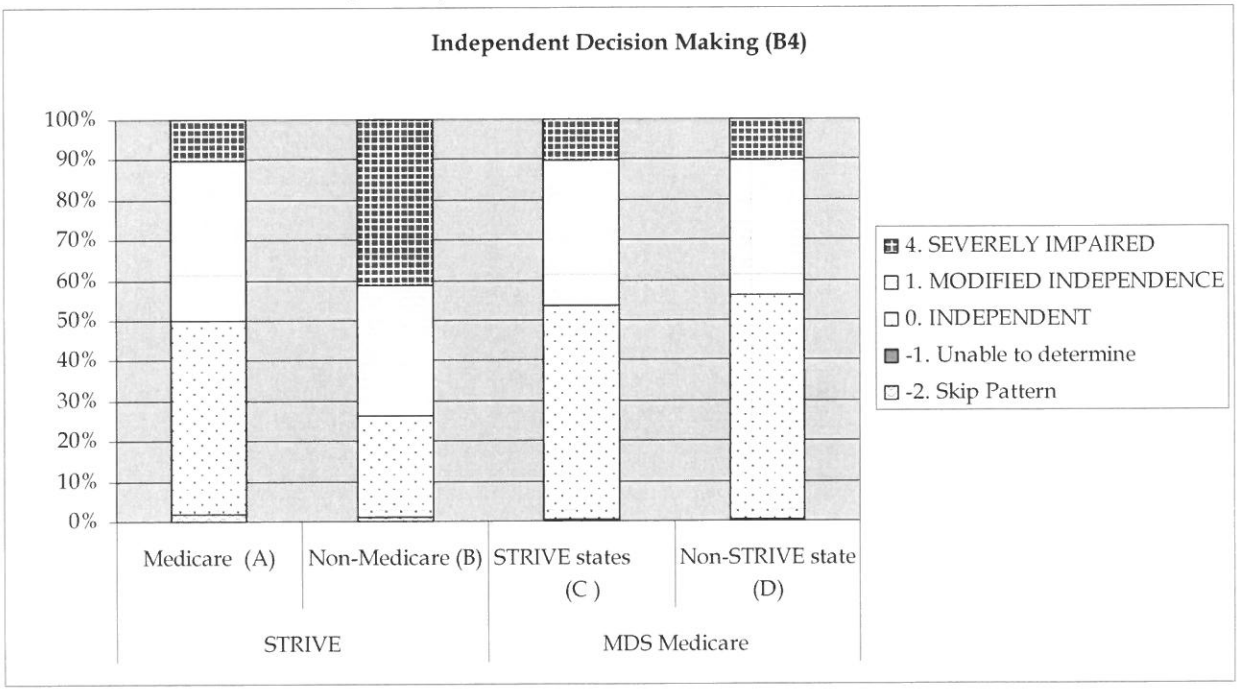
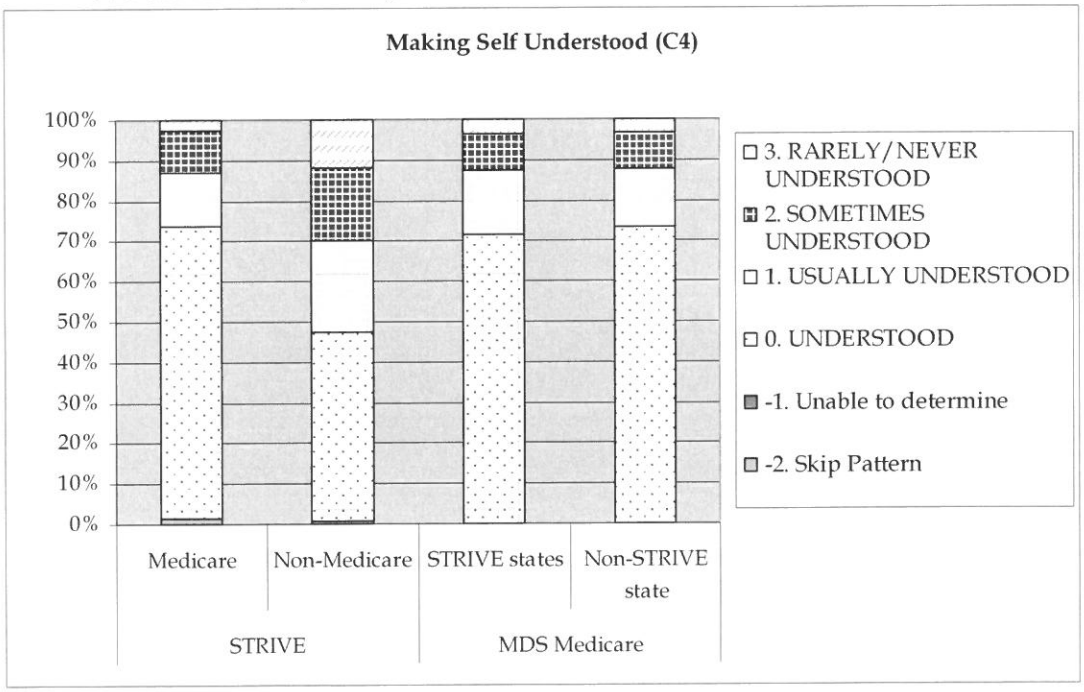


Exhibit 34: Comparative response for Making Self understood (C4) between STRIVE Medicare and Non-Medicare (weighted), MDS Medicare STRIVE States and Non-STRIVE States and Overall Medicare (GRAPH)

	STRIVE Medicare		STRIVE Non-Medicare		MDS (Medicare only) % of cases		
Communication skills - Making Self Understood (C4)	count of cases	% of cases (A)	count of cases	% of cases (B)	STRIVE states (C)	Non-STRIVE states (D)	All Medicare
-2. Skip Pattern	17.78	1.29%	52.16	0.62%	0.00%	0.00%	0.00%
-1. Unable to determine	0.00	0.00%	7.46	0.09%	0.16%	0.07%	0.11%
0. UNDERSTOOD	1002.46	72.60%	3930.69	46.68%	71.32%	73.29%	72.41%
1. USUALLY UNDERSTOOD	183.94	13.32%	1922.18	22.83%	15.82%	14.47%	15.08%
2. SOMETIMES UNDERSTOOD	143.96	10.43%	1496.30	17.77%	9.17%	8.82%	8.98%
3. RARELY/NEVER UNDERSTOOD	32.65	2.36%	1011.06	12.01%	3.53%	3.35%	3.43%

Test Ho : Characteristics independent of Medicare/Non-Medicare (based on STRIVE data)	
Statistics	**Value**
Chi-Square	358.6808
DF for Chi-Square	5
P-value for Chi-Square	< 0.0001

Exhibit 35: Comparative response for Making Self understood (C4) between STRIVE Medicare and Non-Medicare (weighted), MDS Medicare STRIVE States and Non-STRIVE States and Overall Medicare (GRAPH)



e) Nursing time - comparative study between STRIVE Medicare and Non-Medicare cohorts

Each RUG has associated nursing and therapy weights. These weights are used to compute the SNF PPS payment for each group. The computation of RUG nursing weights uses the wage weighted nursing minutes. Two tests were performed to test for the wage weighted nursing time between the Medicare and the Non-Medicare cohorts in the STRIVE sample - Kolmogorov Smirnov (KS) test and two sample t-test. The KS test is a non-parametric analysis which tests if for the two samples (Medicare and Non-Medicare nursing time) the data comes from same distribution. The two sample test for difference in mean is a parametric t-test to test for difference in mean nursing time between the Medicare and the Non-Medicare groups by each RUG. **Exhibit 36** shows the results for the two tests. It can be seen that for most RUGs the nursing time is similar between the Medicare and the Non-Medicare groups. However, for some groups like RUX, RLX the nursing times are statistically different (last column in **Exhibit 36** with "*" indicate a statistically significant difference between the Medicare and Non-Medicare groups). This would indicate that some RUG weights may not be reflective of Medicare patients. Since the computation of nursing weights use all the cases, a difference in the Medicare and Non-Medicare cohorts nursing time (average time or distribution) questions the use of all cases for creation of the weights.

Exhibit 36: Results of T-test for difference in mean Nursing time and difference in distribution (Kolmogorov-Smirnov) of nursing time between Medicare and Non-Medicare cohorts for STRIVE sample (assumed 95% confidence level for tests)

RUG - 53 (index maximized)	Nursing time (by RUG category for Medicare cohort in STRIVE)		Nursing time (by RUG category for Non-Medicare cohort in STRIVE)		p-value for T-test for difference in mean (p-value for KS test for difference in distribution)
	Average Nursing time	Std. Dev. Of nursing time	Average Nursing time	Std. Dev. Of nursing time	
RUX	237.20	70.49	315.71	63.14	0.0181* (0.0573)
RUL	200.02	74.26	184.84	64.77	0.6698 (0.9878)
RVX	212.67	74.40	235.74	73.00	0.5806 (0.5098)
RVL	223.19	118.52	185.71	58.49	0.3682 (0.9943)
RHX					
RHL					
RMX	261.72	111.63	285.44	96.34	0.2962 (0.7387)
RML	195.05	72.13	169.48	81.83	0.1035 (0.7160)
RLX	287.84	0	409.62	0	
RUC	213.48	80.02	247.67	65.42	0.2718 (0.9650)
RUB	179.45	92.33	130.38	57.67	0.0153* (0.2601)
RUA	181.37	81.85	139.92	60.16	0.1287 (0.8544)
RVC	235.09	74.48	150.01	60.85	0.0006* (0.9963)
RVB	150.21	52.82	117.70	41.23	0.0185* (0.0373*)
RVA	107.37	56.78	120.80	31.75	0.3308 (0.9617)

RUG - 53 (index maximized)	Nursing time (by RUG category for Medicare cohort in STRIVE)		Nursing time (by RUG category for Non-Medicare cohort in STRIVE)		p-value for T-test for difference in mean (p-value for KS test for difference in distribution)
	Average Nursing time	Std. Dev. Of nursing time	Average Nursing time	Std. Dev. Of nursing time	
RHC	207.67	68.89	199.86	64.84	0.5843 (0.7473)
RHB	144.74	66.54	122.32	44.87	0.1573 (0.0567)
RHA	156.00	89.39	87.06	36.69	0.0192* (0.1022)
RMC	227.95	75.02	176.92	66.60	0.0140* (0.3738)
RMB	150.16	60.75	150.85	59.68	0.9492 (0.3806)
RMA	118.33	61.84	67.09	51.79	0.0002* (0.2519)
RLB	159.69	67.49	178.78	82.00	0.7166 (0.9639)
RLA	131.86	223.16	117.34	44.53	0.7270 (0.8341)
SE3	258.27	128.54	236.38	123.81	0.3571 (0.0698)
SE2	231.42	100.46	211.90	118.68	0.2010 (0.4239)
SE1	280.79	93.97	166.98	105.99	0.0488* (0.9346)
SSC	181.34	68.78	170.96	70.27	0.5301 (0.4544)
SSB	226.89	45.97	160.62	76.81	0.0107* (0.1060)
SSA	229.04	62.74	126.63	65.15	0.0000* (0.0003*)
CC2	223.43	19.76	197.32	76.97	0.7393 (0.4241)
CC1	214.10	58.52	162.75	66.93	0.1509 (0.2970)
CB2	202.95	53.48	154.84	65.60	0.0526 (0.4602)
CB1	212.74	61.13	140.64	64.15	0.0000* (0.0000*)
CA2	335.70	111.83	130.81	77.77	0.0000* (0.3763)
CA1	105.36	55.65	92.20	53.58	0.1495 (0.0360*)
IB2					
IB1	112.65	173.79	98.14	75.58	0.3995 (0.1191)
IA2					
IA1	92.43	47.10	61.00	45.90	0.3127 (0.2021)
BB2					
BB1					
BA2					
BA1					
PE2					
PE1	214.18	37.02	147.43	69.28	0.0708 (0.0382*)
PD2	171.12	11.43	115.45	80.43	0.3722 (0.3388)
PD1	125.58	39.45	123.65	69.31	0.8963 (0.3225)
PC2					
PC1	142.68	70.87	82.96	42.98	0.3883 (0.7480)
PB2					
PB1	151.92	29.32	78.87	50.32	0.0334* (0.1226)
PA2					

RUG - 53 (index maximized)	Nursing time (by RUG category for Medicare cohort in STRIVE)		Nursing time (by RUG category for Non-Medicare cohort in STRIVE)		p-value for T-test for difference in mean (p-value for KS test for difference in distribution)
	Average Nursing time	Std. Dev. Of nursing time	Average Nursing time	Std. Dev. Of nursing time	
PA1	95.98	25.48	56.24	33.05	0.1551 (0.1101)
BC1	185.44		115.47	87.45	0.0334* (0.9506)

f) Distribution of assessment days between STRIVE and Non-STRIVE states

Assessment days indicate how long a case has been under treatment. A case with a larger number of assessment days (long stay) might have different characteristics than a case with fewer assessment days (short stay). STRIVE data does not have the assessment day variable. Hence it is not possible to check if the STRIVE sample captures sufficient samples to represent the assessment day distribution. Analysis was performed to compare assessment days (e.g., 5, 14, 30 and so on) distributions between the STRIVE states and non-STRIVE states using MDS 2007 data. MDS 2007 data has overall 5,719,114 Medicare cases. Lewin was able to match 4,623,366 cases to claims data. It was observed that for the STRIVE states, almost 21% of the cases could not be matched to claims data to get assessment days and for the non-STRIVE states 18% of the cases could not be matched. **Exhibit 37** shows the distribution (proportion of cases) for assessment days (missing to 30 days). It can be observed that the maximum proportion of cases have days 14, 16, 30 days assessment – both for STRIVE and non-STRIVE states. The shape and spread of distribution for both STRIVE and non-STRIVE states are same. Further nonparametric and T-tests were done on the data to test if the assessment day distributions are different for STRIVE and non-STRIVE states. From **Exhibit 38** and **Exhibit 39** it can be observed that the p-value for all the tests is less than 0.05 (standard assumption for level of significance). Hence it can be concluded that even though the spread is same, the distribution of assessment days for STRIVE and non-STRIVE states are not statistically similar. Also, it is possible that STRIVE does not reflect the national distribution of assessment times because the STRIVE sample design was not designed to account for this variable.

Exhibit 37: Figure showing distribution of assessment days for STRIVE and non-STRIVE states (both excluding the cases with no or greater than 30 assessment days and all MDS (displaying only till day 30))

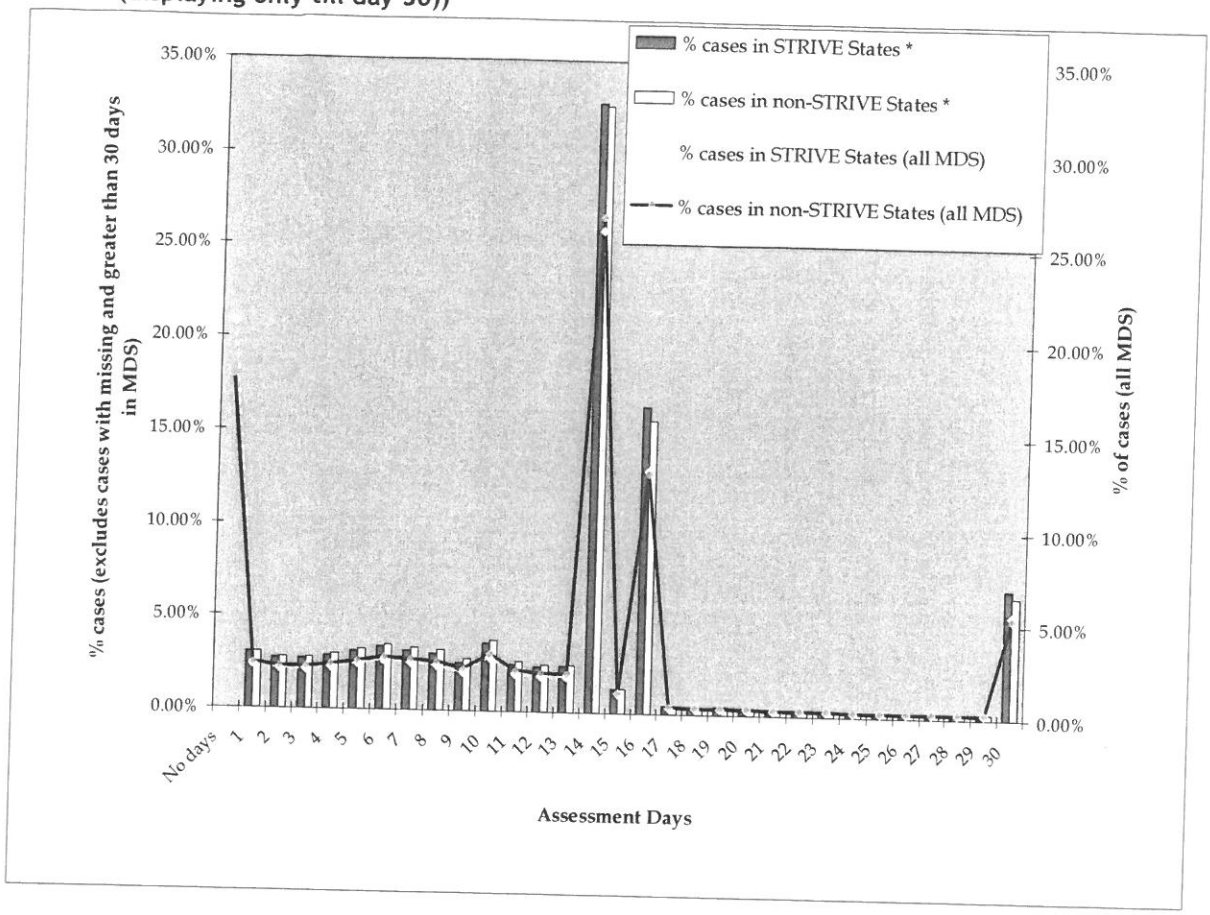


Exhibit 38: Result for nonparametric test (Wilcoxon Signed Rank and Kolmogorov Smirnov) to test Ho: distribution of assessment days same for STRIVE and non-STRIVE states

Wilcoxon Scores (Rank Sums) for Variable AssessmentDays
Classified by Variable strive_flag

strive_flag	N	Sum of Scores	Expected Under H0	Std Dev Under H0	Mean Score
Non-STRIVE State	2587272	5.91287E12	5.95568E12	1386525178	2285369.84
STRIVE State	2016559	4.68476E12	4.64195E12	1386525178	2323144.94

Average scores were used for ties.

Wilcoxon Two-Sample Test

Statistic	4.68476E12
Normal Approximation	
Z	30.8753
One-Sided Pr > Z	<.0001
Two-Sided Pr > |Z|	<.0001

t Approximation	
One-Sided Pr > Z	<.0001
Two-Sided Pr > |Z|	<.0001

Kolmogorov-Smirnov Test for Variable AssessmentDays
Classified by Variable strive_flag

strive_flag	N	EDF at Maximum	Deviation from Mean at Maximum
Non-STRIVE State	2587272	0.391846	9.765327
STRIVE State	2016559	0.377986	-11.061204
Total	4603831	0.385775	

Maximum Deviation Occurred at Observation 43
Value of AssessmentDays at Maximum = 13.0

Kolmogorov-Smirnov Two-Sample Test (Asymptotic)

KS	0.006877	D	0.013860
KSa	14.755062	Pr > KSa	<.0001

Exhibit 39: Result for t-test to test Ho: distribution of assessment days same for STRIVE and non-STRIVE states

The TTEST Procedure
Statistics

Variable	strive_flag	N	Lower CL Mean	Mean	Upper CL Mean	Std Dev	Std Err	Minimum	Maximum
AssessmentDays	Non-STRIVE State	259E4	12.983	12.991	12.999	6.7142	0.0042	1	30
AssessmentDays	STRIVE State	202E4	13.151	13.161	13.17	6.7814	0.0048	1	30
AssessmentDays	Diff (1-2)		-0.182	-0.17	-0.157	6.7437	0.0063		

T-Tests

Variable	Method	Variances	DF	t Value	Pr > |t|
AssessmentDays	Pooled	Equal	46E5	-26.77	<.0001
AssessmentDays	Satterthwaite	Unequal	43E5	-26.74	<.0001

Equality of Variances

Variable	Method	Num DF	Den DF	F Value	Pr > F
AssessmentDays	Folded F	202E4	259E4	1.02	<.0001

g) Analysis of selected STRIVE participating providers

AHCA identified 83 providers participating in the STRIVE study. **Exhibit 40** shows some observations based on this list of 83 providers. It can be observed that there were some facilities which did not have any Medicare residents. Another observation is the distribution of urban-rural and distribution of multi-facility in the sample in comparison to the OSCAR data. The sample distribution is different from the OSCAR distribution.

Exhibit 40: Number of STRIVE provider participants, proportion of urban and rural facilities in the sample and from OSCAR data, proportion of multi facility for the sample and OSCAR data

State	Sample Size	Number of list of providers from AHCA	Number of providers with no Medicare residents	% of urban and rural facilities		Multi facility		Hospital Based	
				Urban	Rural	% Yes	% No	% Yes	% No
Based on list of 93 providers participating in STRIVE study									
Louisiana	10	9	1	55.6%	44.4%	33.3%	66.7%	11.1%	88.9%
Montana	9	10	1	40.0%	60.0%	60.0%	40.0%	30.0%	70.0%
New York	21	18	2	94.4%	5.6%	11.1%	88.9%	11.1%	88.9%
Ohio	20	19	0	84.2%	15.8%	63.2%	36.8%	5.3%	94.7%
Virginia	17	15	1	86.7%	13.3%	53.3%	46.7%	13.3%	86.7%
Washington	15	14	2	71.4%	28.6%	50.0%	50.0%	14.3%	85.7%
Washington D.C.	9	8	0	100.0%	0.0%	0.0%	100.0%	12.5%	87.5%
From OSCAR data									
Louisiana				63.2%	36.8%	47.9%	52.1%	7.49%	92.51%
Montana				20.6%	79.4%	38.1%	61.9%	37.11%	62.89%
New York				85.0%	15.0%	12.9%	87.1%	10.53%	89.47%
Ohio				72.9%	27.1%	60.0%	40.0%	5.11%	94.89%
Virginia				71.4%	28.6%	68.6%	31.4%	6.55%	93.45%
Washington				79.6%	20.4%	60.8%	39.2%	7.60%	92.40%
Washington D.C.				100.0%	0.0%	25.0%	75.0%	25.00%	75.00%

h) Regression model to measure impact of being in a STRIVE state on NTAS costs/charges

For the first test, total case charges, therapy case costs, and pharmacy costs were calculated for each case in the database. Lewin constructed four case cost (charges) regressions which estimated the impact of being in a SRIVE state on costs/charges where:

Cost (charge) per case = f (RUG-III specific days and a STRIVE data dummy variable)

This regression is run for each of routine cost (charges) and therapy costs per case dependent variables. The results of these regressions are shown in **Exhibit 41**.

Exhibit 41: Difference between STRIVE States per Diem Cost (Charges) as Compared to Non-STRIVE States (using 2006 MDS and claims data)

	$ Value	Percent of National per Diems Cost (Charge)
Total Charges per Diem	-47.08	-10.33%
Therapy Cost per Diem	-8.02	-9.24%
Pharmacy Cost Per Diem	-11.17	-25.48%

While these results do not reflect the actual facilities within a given state entered into the STRIVE sample, they do reflect overall state representativeness.

In the next test, we calculate the per diem cost per RUG for STRIVE and non-STRIVE states. The per diems were than converted to a set of relative values by dividing each RUG's per diem rate by the overall average within STRIVE and non-STRIVE states. The resultant RUG relative weights for STRIVE states and non-STRIVE states were then correlated. These results are presented below. From **Exhibit 42** and **43** it can be observed that most RUGs have a significant impact on the per diem costs both for the STRIVE states and the Non-STRIVE states.

Exhibit 42: Coefficient estimates for Routine Cost by each RUG category for STRIVE and Non-STRIVE States

Parameters	STRIVE States	Non-STRIVE States
R-Square for model fit	0.7148	0.7002
RUG - 53		
RUX	182.31*	220.38*
RUL	195.23*	241.26*
RVX	197.93*	233.86*
RVL	208.56*	243.82*
RHX	225.93*	273.72*
RHL	228.06*	520.13*
RMX	219.80*	264.05*
RML	230.08*	279.67*
RLX	308.91*	339.45*
RUC	191.65*	220.33*
RUB	198.44*	224.39*
RUA	193.24*	215.02*
RVC	204.67*	231.78*
RVB	211.86*	224.90*
RVA	191.77*	219.59*
RHC	258.90*	233.35*
RHB	267.22*	236.27*
RHA	214.62*	235.27*
RMC	266.93*	249.41*
RMB	304.90*	246.50*
RMA	261.22*	250.43*
RLB	247.69*	212.68*
RLA	258.29*	199.47*
SE3	248.05*	298.82*
SE2	258.25*	298.62*
SE1	247.11*	258.61*
SSC	239.62*	219.48*
SSB	246.63*	224.40*
SSA	232.40*	272.71*

Parameters	STRIVE States	Non-STRIVE States
CC2	207.42*	249.88*
CC1	247.52*	233.10*
CB2	195.67*	276.35*
CB1	252.43*	248.67*
CA2	202.66*	288.92*
CA1	245.48*	271.00*
IB2	298.94*	188.72*
IB1	221.00*	279.97*
IA2	339.45*	167.81*
IA1	220.72*	268.34*
BB2	110.04*	172.49*
BB1	161.38*	208.53*
BA2	329.53*	8.37
BA1	301.43*	251.86*
PE2	168.19*	135.49*
PE1	217.60*	296.68*
PD2	188.37*	197.81*
PD1	216.00*	287.30*
PC2	171.19*	252.74*
PC1	214.85*	275.51*
PB2	330.18*	98.98*
PB1	172.95*	295.84*
PA2	196.03*	165.41*
PA1	205.60*	294.00*

Exhibit 43: Coefficient estimates for Therapy Cost by each RUG category for STRIVE and Non-STRIVE States

Parameters	STRIVE States	Non-STRIVE States
R-Square for model fit	0.8508	0.8226
RUG - 53		
RUX	129.57*	137.02*
RUL	125.10*	139.64*
RVX	104.81*	108.10*
RVL	102.79*	114.43*
RHX	59.25*	149.68*
RHL	58.42*	163.13*
RMX	77.60*	91.74*
RML	76.78*	99.29*
RLX	33.29*	59.80*
RUC	131.41*	137.14*
RUB	128.30*	135.33*
RUA	131.48*	137.48*

Parameters	STRIVE States	Non-STRIVE States
RVC	99.67*	96.99*
RVB	100.08*	101.69*
RVA	100.67*	102.02*
RHC	80.51*	78.57*
RHB	84.62*	85.40*
RHA	74.49*	80.06*
RMC	46.55*	43.20*
RMB	54.82*	56.04*
RMA	46.75*	52.71*
RLB	0.41	17.02*
RLA	11.21*	15.37*

The STRIVE data will be ultimately utilized to develop payment weights for nursing and therapy. Given this purpose, we tested the hypothesis that the relative weights for the RUG categories based on the claims data for the STRIVE versus the non-STRIVE states are different. The results of this hypothesis test are shown in **Exhibit 44.**

In order to test this hypothesis, we ran separate set of regression for the STRIVE and non-STRIVE states with the same model specifications, as mentioned above. Relative weights were derived using the parameter estimates of the RUG categories in the model. The set of relative weights for each regression (STRIVE and non - STRIVE) were compared. A paired t-test for each couplet of RUG category (e.g. RUX_{STRIVE} versus $RUX_{non\text{-}STRIVE}$) was used to test the statistical significance of the difference between the relative weights.

Exhibit 44: Statistical Significance for the Differences Between the Relative Weights by RUG Categories for the STRIVE versus non-STRIVE states

	2007 Routine Cost Relative Weights			2007 Therapy Cost Relative Weights		
	Relative weights		Statistically significant difference indicator	Relative weights		Statistically significant difference indicator
RUG - 53	STRIVE States	Non-STRIVE States		STRIVE States	Non-STRIVE States	
RUX	0.824	0.828	N	1.443	1.295	Y
RUL	0.882	0.906	Y	1.393	1.320	Y
RVX	0.894	0.879	Y	1.167	1.022	Y
RVL	0.942	0.916	Y	1.145	1.082	Y
RHX	1.021	1.028	N	0.660	1.415	Y
RHL	1.030	1.954	Y	0.651	1.542	Y
RMX	0.993	0.992	N	0.864	0.867	N
RML	1.039	1.051	Y	0.855	0.939	Y
RLX	1.396	1.275	N	0.371	0.565	Y
RUC	0.866	0.828	Y	1.463	1.296	Y
RUB	0.896	0.843	Y	1.429	1.279	Y
RUA	0.873	0.808	Y	1.464	1.300	Y
RVC	0.925	0.871	Y	1.110	0.917	Y
RVB	0.957	0.845	Y	1.115	0.961	Y

RUG - 53	2007 Routine Cost Relative Weights			2007 Therapy Cost Relative Weights		
	Relative weights		Statistically significant difference indicator	Relative weights		Statistically significant difference indicator
	STRIVE States	Non-STRIVE States		STRIVE States	Non-STRIVE States	
RVA	0.866	0.825	Y	1.121	0.964	Y
RHC	1.170	0.877	Y	0.897	0.743	Y
RHB	1.207	0.888	Y	0.942	0.807	Y
RHA	0.970	0.884	Y	0.830	0.757	Y
RMC	1.206	0.937	Y	0.518	0.408	Y
RMB	1.377	0.926	Y	0.611	0.530	Y
RMA	1.180	0.941	Y	0.521	0.498	Y
RLB	1.119	0.799	N	0.005	0.161	Y
RLA	1.167	0.749	Y	0.125	0.145	N
SE3	1.121	1.123	N			
SE2	1.167	1.122	Y			
SE1	1.116	0.972	Y			
SSC	1.083	0.825	Y			
SSB	1.114	0.843	Y			
SSA	1.050	1.025	Y			
CC2	0.937	0.939	N			
CC1	1.118	0.876	Y			
CB2	0.884	1.038	Y			
CB1	1.140	0.934	Y			
CA2	0.916	1.085	Y			
CA1	1.109	1.018	Y			
IB2	1.351	0.709	N			
IB1	0.998	1.052	N			
IA2	1.534	0.630	Y			
IA1	0.997	1.008	N			
BB2	0.497	0.648	N			
BB1	0.729	0.783	N			
BA2	1.489	0.031	Y			
BA1	1.362	0.946	Y			
PE2	0.760	0.509	Y			
PE1	0.983	1.115	Y			
PD2	0.851	0.743	Y			
PD1	0.976	1.079	Y			
PC2	0.773	0.950	N			
PC1	0.971	1.035	N			
PB2	1.492	0.372	Y			
PB1	0.781	1.111	Y			
PA2	0.886	0.621	N			
PA1	0.929	1.105	Y			

AHCA identified 83 providers from 7 states. STRIVE sampling heavily based on voluntary participation of facilities. Hence, similar cost model was built with the STRIVE participants on

the data for the 7 states to test for any difference in behavior of a STRIVE participant to a non-participant. Considering the data for only 7 states and for the STRIVE participants, some RUGS do not have sufficient sample size. Hence model was built to compare the effect for the important RUGs with high therapy times or the special services. **Exhibit 45** below shows that for some RUGs the relative weights are significantly different between the participants and the non-participants.

Exhibit 45: Statistical Significance for the Differences Between the Relative Weights by RUG Categories for the STRIVE participant versus STRIVE non-participants for 7 STRIVE states

	2007 Routine Cost Relative Weights			2007 Therapy Cost Relative Weights		
	Relative weights		Statistically	Relative weights		Statistically
RUG - 53	STRIVE participants	STRIVE Non-participants	significant difference indicator	STRIVE participants	STRIVE Non-participants	significant difference indicator
RUX	0.92	0.83	N	1.48	1.65	Y
RUL	0.85	0.88	N	1.46	1.56	Y
RVX	0.93	0.87	N	1.25	1.26	N
RVL	0.94	0.93	N	1.19	1.25	Y
RHX	0.20	1.34	N	1.64	0.39	Y
RHL	(0.65)	1.25	N	0.25	0.55	N
RMX	1.01	1.05	N	0.86	0.91	Y
RML	0.96	1.07	Y	0.87	0.89	Y
RLX	3.45	1.44	Y	0.31	0.36	N
RUC	0.85	0.84	N	1.40	1.61	Y
RUB	1.03	0.85	Y	1.39	1.58	Y
RUA	0.74	0.78	N	1.38	1.56	Y
RVC	0.96	0.91	N	1.10	1.21	Y
RVB	0.95	0.96	N	1.11	1.23	Y
RVA	0.67	0.82	Y	1.02	1.18	Y
RHC	1.18	1.22	N	1.00	0.99	N
RHB	1.28	1.27	N	1.09	1.05	Y
RHA	1.03	0.99	N	1.02	0.91	Y
RMC	1.66	1.37	Y	0.67	0.60	Y
RMB	1.69	1.39	Y	0.90	0.67	Y
RMA	1.69	1.25	Y	0.83	0.57	Y
RLB	1.75	1.17	Y	0.06	(0.01)	N
RLA	1.24	1.14	N	0.24	0.00	N
SE3	1.74	1.55	Y			
SE2	1.50	1.47	N			
SE1	2.59	1.31	Y			

i) Distribution of Therapy minutes across seven day study period

The determination of therapy times has been problematic for STRIVE analysts because these data were collected using two methods: PDA data collection (a handheld electronic data entering system) and paper data collection. The PDA data collection results do not match the paper data collection results.

Exhibit 46, as taken from STRIVE TEP materials, shows that as a percent of the weekly total times, PDA daily (week day only) data collection represents between 21 percent and 30 percent. By way of comparison, paper data collection times for weekdays represent between 10 and 12 percent of weekly total times. Most telling is that for Friday, paper data collection represents 12 percent of weekly total times while PDA data collection represents 21 percent. As it seems unlikely that facilities surveyed would vary this much on Friday therapy minutes, STRIVE analysts determined that paper data collection under-counted minutes.[7] Accordingly, they decided to increase Monday and Friday paper data collection minutes to reflect PDA data collection levels as observed on Tuesday, Wednesday, Thursday and partially on Friday.

Exhibit 46: Determining Therapy Times

Collection Schedule	N	Tu	We	Th	Fr	Sa	Su	Mo	Tu
A	8012	**26%**	**25%**	**22%**	12%	2%	1%	12%	-
B	1193	**25%**	**27%**	**26%**	12%	1%	0%	10%	-
C	516	-	**30%**	**26%**	**21%**	1%	1%	12%	9%
Total	9721	24%	26%	23%	13%	2%	1%	12%	1%

[7] The paper data collection technique may have under reported therapy minutes because the individuals responsible for the data collection were not adequately trained and monitored

III. DISCUSSION

This paper indicates that the STRIVE sample is minimally adequate to create a revision to MDS. We pointed to numerous instances where the STRIVE sample is subject to biases.

In addition to our concerns with STRIVE sampling procedures, we have an over-arching strategic concern. The RUGs based SNF PPS system is based on a set of nursing and therapeutic case time relationships (case relative) that are expensive to replicate and because of this expense, are rarely updated. To date these nursing times have been derived from a relatively small sample as compared to the universe of SNF facilities and SNF claims. This places SNF IPPS apart from all other IPPS systems where the relative weights are updated on an annual basis using the universe of claims data. As compared to SNF PPS, other PPS systems are advantaged by annual revisions, using in many cases millions of case level observations. The SNF PPS might be well served to be placed on an entirely different platform (i.e., DRGs) so that all of its millions of cases could contribute to annual updates of case weights. This is all the more plausible as SNFs become more like acute care settings and less like traditional long term care settings.

APPENDIX A

Overview of STRIVE sampling procedure

Step	Description	Sampling Procedure
1	Identified all certified facilities in the nation.	Definition of population
2	Identified 15 states that agreed to participate in the study.	Self-selection (not random)
3	Applied data-based exclusions using QI/QM data and survey deficiency data. Eliminated poorest quality facilities in each state (5% to 10% of all facilities). Population defined as all remaining facilities (referred to as "eligible facilities").	Redefinition of population
4	Applied geographic restrictions in certain states.	Redefinition of population
5	Stratified eligible facilities within each state into five strata. Some strata were not represented in some states.	Stratification
6	Set targeted number of facilities for each stratum within each state. Targets were based upon number of available facilities, number of facilities data monitors were able to visit, and overall study targets.	Sample size determination (no selection involved)
7	Within each stratum within each state, selected the target number of facilities with probability proportional to size (where size was defined by the number of residents in the facility on a given day). Selected an over-sample allowing for deletions and refusals.	Sample with probability proportional to size
8	Each list of sampled facilities (for each stratum within each state) was put in random order.	Randomization
9	Sample lists within each state were reviewed by stakeholders who eliminated facilities that were closed, unable to participate, or were known to be of very poor quality.	Exclusions based on judgment (not random)

Attachment C

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without the application of the parity adjustment recalibration considered in section II.B.2, as illustrated in Table 9B. We derive the Labor and Non-labor columns from Tables 7A and 7B.

TABLE 9A—RUG–IV—INCLUDING PARITY ADJUSTMENT RECALIBRATION SNF XYZ: LOCATED IN CEDAR RAPIDS, IA

[(Urban CBSA 16300) Wage Index: 0.8857]

RUG–IV group	Labor	Wage index	Adjusted labor	Non-labor	Adjusted rate	Percent adjustment	Medicare days	Payment
RVX	$450.23	0.8857	$398.77	$204.12	$602.89	$602.89	14	$8,440.46
ES2	361.49	0.8857	320.17	163.90	484.07	484.07	30	14,522.10
RHA	227.14	0.8857	201.18	102.98	304.16	304.16	16	4,866.56
CC2*	209.39	0.8857	185.46	94.93	280.39	639.29	10	6,392.90
BA2	144.35	0.8857	127.85	65.45	193.30	193.30	30	5,799.00
							100	40,021.02

*Reflects a 128 percent adjustment from section 511 of the MMA.

TABLE 9B—RUG–IV—WITHOUT PARITY ADJUSTMENT RECALIBRATION SNF XYZ: LOCATED IN CEDAR RAPIDS, IA

[(Urban CBSA 16300) Wage Index: 0.8857]

RUG–IV group	Labor	Wage index	Adjusted labor	Non-labor	Adjusted rate	Percent adjustment	Medicare days	Payment
RVX	$549.43	0.8857	$486.63	$249.10	$735.73	$735.73	14	$10,300.22
ES2	361.49	0.8857	320.17	163.90	484.07	484.07	30	14,522.10
RHA	262.42	0.8857	232.43	118.97	351.40	351.40	16	5,622.40
CC2*	209.39	0.8857	185.46	94.93	280.39	639.29	10	6,392.90
BA2	144.35	0.8857	127.85	65.45	193.30	193.30	30	5,799.00
							100	42,636.62

*Reflects a 128 percent adjustment from section 511 of the MMA.

III. Resource Utilization Groups, Version 4 (RUG–IV)

A. Prospective Payment for SNF Non-therapy Ancillary Costs

1. Previous Research

We have conducted several studies since 1999 to refine the reimbursement methodology for non-therapy ancillary (NTA) services covered by the SNF PPS. At the inception of the SNF PPS, payment for NTA services was included in the 44-group RUG system of case-mix groups. Analysis showed that there was only a weak correlation between NTA services costs and the RUG–III classification group. As the current RUG–IV system, similar to the RUG–III system, has maintained NTA costs coverage as part of the nursing CMIs, we believe that the present methodology for case-mix adjusting the NTA payment amount may not be the most accurate predictor of NTA costs. We are particularly concerned that the present system could underestimate NTA costs for the patients with the highest NTA needs, which could lead to restricted access to care for those patients.

As a result of research conducted in the late 1990s, one proposal included in the FY 2001 proposed rule was to modify the RUG system by adding 14 additional RUG groups (65 FR 19193–19194, 19203, April 10, 2000). These additional groups were designed to recognize that patients qualifying for both a Rehabilitation RUG and an Extensive Services RUG incurred NTA costs estimated to be as much as three times higher than those of patients who qualify solely for a Rehabilitation RUG.

As noted in the 2006 Report to Congress on case-mix refinements (available online at *http://www.cms.gov/SNFPPS/Downloads/RC_2006_PC-PPSSNF.pdf*), additional research conducted by Abt Associates in the late 1990s experimented with several mathematical models of NTA costs. Results from this work could have practical application as an ancillary "add-on" index based on the beneficiary's predicted, per diem NTA costs. As discussed in the FY 2001 SNF PPS proposed rule (65 FR 19195, April 10, 2000), NTA index models (both weighted and unweighted) were tested after exploring MDS variables that appeared to be predictive of NTA costs. In the unweighted model, cost predictions were based on counts of qualifying patient characteristics (characteristics such as respiratory infection or skin wounds). In the weighted models, a small set of payment groups were defined from "index models" that weighted the predictors where the weights were proportional to the marginal impact of a patient characteristic on estimated NTA costs. The array of predicted costs generated by the equation could be subdivided into ranges of costs, or intervals, in order to define a small number of payment groups. As discussed in the Technical Appendix to the FY 2001 proposed rule (65 FR 19240, 19248, April 10, 2000), variations were created by applying the index models to alternative sets of RUG groups. As further discussed in the FY 2001 proposed rule (65 FR 19196), we proposed a separate unweighted NTA index to be applied to certain RUG categories based on clinical variables on the MDS. In addition, to facilitate the incorporation of this proposed refinement into the case-mix classification system, we proposed to create a new component of the payment rates for NTA services (65 FR 19192).

As explained in the FY 2001 SNF PPS final rule (65 FR 46773, July 31, 2000), while the expanded RUG groups approach and the NTA index approach initially appeared to improve payment accuracy in comparison to the existing case-mix system, attempts to validate the results on a later national PPS data set did not confirm the initial findings. As a result, we did not finalize the proposals made in April 2000.

We sponsored subsequent research by the Urban Institute using claims samples from 2001. This work led to the FY 2006 final rule (70 FR 45026, 45030–34, August 4, 2005), which essentially implemented a variation of the 58-group RUG proposal developed by Abt Associates discussed above. In that rule, we finalized a system composed of 53 groups, by augmenting the original 44-group system with nine additional groups identifying patients simultaneously qualifying for the Extensive Services and Rehabilitation groups. This incremental change to the grouping system was accompanied by an across-the-board increase in the case-mix weights for the payment component that includes NTA costs. Both of these modifications were intended to enable the original RUG–III payment model to account more accurately for variation in NTA costs.

Using the 2001 data set, the Urban Institute also experimented with prediction models that were extensions of the original Abt Associates NTA index approaches. A small number of additional variables (for example, age) and improvements to the methodology used to measure independent variables in the data base led to potential improvements over the earlier model. The Urban Institute also explored substantially more complex models that incorporated variables derived from qualifying hospital stay claims; these models were estimated separately for patients after subdividing them into one of three groups: Acute, chronic, or rehabilitation.

In 2008, the Medicare Payment Advisory Commission (MedPAC) sponsored analyses by researchers from the Urban Institute extending some of the Institute's earlier work. This led to a MedPAC proposal that was based on the most promising results of the Institute's earlier work. The study used 2003 Medicare data. It resulted in a prediction equation for NTA services that used a large number of variables derived from the MDS assessments and hospital claims (for example, diagnosis), a measure of length of stay, as well as patient age (Bowen Garrett and Douglas A. Wissoker, "Modeling Alternative Designs for a Revised PPS for Skilled Nursing Facilities: A study conducted by staff from the Urban Institute for the Medicare Payment Advisory Commission," June, 2008; available online at *http://www.medpac.gov/documents/Jun08_SNF_PPS_CONTRACTOR_CC.pdf*). MedPAC did not propose a system of NTA case-mix groups based on the prediction equation. However, the basic equation could be used to generate an array of predictions in the population and to group the predictions into cost intervals for defining a smaller number of payment groups. This is the same approach that Abt Associates took with its index model.

In a June 2010 memo to MedPAC (available online at *http://www.medpac.gov/documents/Oct10_SNF_NonTherapyAncillary_CONTRACTOR_CC.pdf*), the Urban Institute described a series of refinements to MedPAC's 2008 proposed model. Most importantly, with their 2010 model, the Urban Institute sought to reduce the number of indicators from nearly 70 and ensure that all indicators are derived from information based on available administrative data. Additionally, when the Urban Institute used 2007 SNF data files (as compared to the 2003 data files used to support the previous model), they found that the predictive ability of the model was reduced slightly from 23 percent to 21 percent.

After completing a revised statistical analysis and eliminating indicators for conditions that were either relatively rare or had little impact on NTA costs, the Urban Institute advanced a 20-variable "streamlined" model that maintained almost equivalent predictive accuracy to MedPAC's 2008 proposed model described above. The streamlined model included many of the "high-impact" variables contained in the 69-variable model, such as IV medication use and respiratory services. Additionally, the streamlined model included variables suggested by CMS, such as the nursing case-mix index and the MDS diabetes diagnosis, which were also found to be strong indicators of anticipated NTA costs.

2. Conceptual Analysis

Based on our initial research, we continue to believe that an administratively feasible and equitable approach to prospective payments for NTA costs would incorporate the following criteria:

- Uses information from available administrative data (data available on claims or on the MDS assessment);
- Uses predictor variables that represent meaningful correlates of NTA services that are highly predictive, clinically sensible, sensitive to patient NTA variation, and do not promote undesirable incentives for providers;
- Is developed by using the best and most recently available data sources, in order to assure that it reflects current care practices and resource utilization;
- Results in a separate NTA component and index that uses a minimal number of payment groups, or tiers, to limit the complexity of the SNF PPS as a whole; and
- Uses payment groups and predictor variables that are readily understandable and clinically intuitive.

These criteria and our initial research intent were discussed in the FY 2010 SNF PPS proposed rule (74 FR 22238 through 22241, May 12, 2009), and responses to comments on this initial research proposal were part of the FY 2010 SNF PPS final rule (74 FR 40341 through 40342, August 11, 2009). These comments helped to guide our initial research to develop the conceptual model discussed in this proposed rule.

In addition to the criteria specified above, our research is also guided by the results of multiple recent studies, such as those conducted by the Urban Institute, regarding the relationship between NTA utilization and resident condition. Most relevant to our work in this area, these studies suggest that the highest-cost ancillary services (such as respiratory services, enteral and parenteral feeding, and treatment of chronic conditions, such as AIDS) are used by a small subset of the SNF population, and that the high and varied cost of individual services or drugs by these populations—rather than the volume of NTA utilization—can at least partially explain the wide variance in NTA costs.

To continue our analytic work for developing a payment methodology for NTA costs, we have utilized a large analytic data file that combines Medicare SNF claims, cost reports, and MDS assessments from FY 2007. The file has been used to study relationships between reported claims charges for NTA-related revenue centers and predictor variables defined from items on the MDS. We augmented the analytic file with diagnosis information from the patient's qualifying hospital stay as a way of compensating for potentially incomplete diagnosis reporting on MDS and on SNF claims. (As noted earlier, it is not our intention to use hospital-assigned diagnoses directly in any tiered system we may propose.) Because three-quarters of the NTA costs are pharmacy-related, we have summarized the patient's recent diagnoses using the diagnosis classification system CMS developed for Medicare Part D risk adjustment. This is known as the RxHCC system. The RxHCC system was developed from the Hierarchical Condition Categories (HCCs) used for risk-adjustment in Medicare Part C. We also continue to examine the performance of the diagnosis flags from Section I of the MDS.

Now that more recent data are available, we are developing a similar

file using FY 2009 data, which may be used to test our initial model formulas and monitor any recent changes to NTA utilization patterns. We solicit comment on the criteria specified above and the conceptual model discussed in the following sections.

3. Analytic Sample

To develop the analytic sample, we linked FY 2007 SNF cost reports with SNF Medicare Part A claims covering services delivered during the SNF's cost reporting period. The actual cost of the NTA services is determined by adjusting claims charges for NTA services in accordance with cost-to-charge ratios (CCRs) from the cost report. The NTA costs are then used as the dependent variable in all subsequent analyses, while MDS items and claims diagnoses act as the independent variables. We collected all claims, and used only those claims submitted within the reporting period for the cost reports available. Requiring a matched cost report eliminated some SNFs represented in the 2007 National Claims History. The SNFs that do not meet this threshold tend to be smaller SNFs, though this requirement does not adversely affect the representativeness of the analytic sample.

We have studied the same three general categories of NTAs as previous research has suggested: Respiratory-related costs (for example, ventilator services), drug-related costs, and other non-therapy ancillary (ONTA) costs (for example, wound dressings). We derive category-specific CCRs for each facility's cost report remaining in the sample. An additional requirement for an SNF to be in the sample is that it reports some drug and ONTA charges on the claims; otherwise, the facility's data may not be accurate enough to be used in the sample. Positive respiratory charges are not necessary, as these types of charges are not always reported. One reason is that some respiratory charges, such as oxygen-related supplies, are reported as ONTAs, based on certain reporting standards.

We trimmed the sample to eliminate facilities with extreme values for CCRs, as outlying CCRs could skew the results of our analysis. Finally, we compared the drug and ONTA charges on the claims to the SNF's cost report drug and ONTA charges, since wide differences could be the result of incomplete or inaccurate reporting. Facilities that were found to exhibit such wide differences were dropped from the sample. For our analysis, accurate charge reporting is critical for the measurement of our dependent-variable, CCR-adjusted NTA charges.

4. Approach to Analysis

The dependent variable in our analysis is the NTA charges, adjusted by CCRs. The independent variables are diagnosis groupings and variables selected from the matched MDS assessments. With the recent implementation of the MDS 3.0, we will monitor any changes in our selected set of variables and, based on research conducted as part of the Post Acute Care Payment Reform Demonstration (PAC–PRD), we may explore changes to the MDS assessment which would allow us to collect more detailed information on NTA costs and utilization. However, as our current analytic database is based on FY 2007 and FY 2009 data, our analysis still utilizes the MDS 2.0. The following sections of the MDS 2.0 contribute variables to be tested for their predictive value:

E: Mood and Behavior Problems
G: Physical Functioning and Structural Problems
H: Continence in Last 14 Days
I: Disease Diagnoses
J: Health Conditions
K: Oral/Nutritional Status
L: Oral/Dental Status
M: Skin Condition
O: Medications
P: Special Treatments and Procedures

Our study of the ability of particular MDS items and diagnosis groupings to predict NTA costs builds on previous research discussed above and adheres to the criteria outlined earlier in this section. Now that we have completed the initial phase of this research, we are in a better position to understand the relationship between NTA costs and certain classes of illness. Understanding these relationships has led us to explore potential groupings of conditions, distinct from the RUG classification or qualifying hospital condition, which could suggest a feasible system for NTA payment tiers.

5. Payment Methodology

The payments associated with a new NTA component of the SNF PPS would be financed by reallocating that portion of the current nursing component which has been previously considered to account for NTA costs. Our intent in adding a separate NTA component, distinct from the nursing component, would be to provide greater predictive ability, promote more equitable NTA reimbursement, and achieve a more cost-effective payment structure for SNFs.

The NTA payment would be broken into two parts: A routine NTA bundled payment (RNP) and a tiered non-routine NTA payment (TNP).

a. Routine Non-Therapy Ancillary Payment

The RNP would constitute a base payment for every patient day, distinct from the tiered NTA payment described below and separate from the nursing component, to cover the cost of routine NTA services (drugs, laboratory services, *etc.*) that are commonly given to a wide range of SNF patients. CMS is currently analyzing SNF claims data linked to specially collected data from Medicare research projects, such as the STRIVE study and the PAC–PRD project, to help determine the specific drugs and services that would be included in the RNP and an appropriate per diem amount to cover their purchase and administration. Examples of such routine NTAs could include high blood pressure medication, common analgesics, anti-infective agents, sleep aids, laxatives, and standard blood tests, among others. The RNP would help capture the daily cost of administering these types of routine NTAs, thereby allowing for a more clearly defined and appropriate tiered NTA bundled payment to cover non-routine NTA services, as well as a more transparent payment for such routine costs incurred by providers. We also believe that, in conjunction with a possible NTA outlier policy (discussed below), having an RNP component would limit the administrative burdens associated with reporting that might be required to administer outlier payments.

As with the other components of the SNF PPS, the RNP piece of the NTA component would be updated annually to account for changes in the market basket and other relevant adjustments. It would operate in much the same way as the non-therapy non-case mix adjusted component of the current SNF PPS, in that it would constitute a flat amount added to the payment for all applicable SNF claims.

b. Tiered Non-Routine NTA Bundled Payment

The TNP would operate as a variation of the model previously discussed in the FY 2001 SNF PPS proposed rule (65 FR 19188, April 10, 2000). Specifically, we are in the process of developing a tiered NTA bundled payment, where payment tiers track relative variations in NTA costs and utilization. The June 2008 Urban Institute report referenced above (Garrett and Wissoker, June 2008) suggested that average wage-adjusted per diem NTA costs were approximately $68, with a standard deviation of $94, which would support the use of multiple case-mix-adjusted tiers.

The TNP is designed to capture the average cost of the drugs and services, given the patient's clinical characteristics, excluding the drugs and services covered by the RNP or those already excluded from the SNF PPS altogether under the consolidated billing requirements. Such a cost schedule and tier structure is currently under development, using recent Medicare Part A claims data and data from the PAC–PRD.

We have focused on developing an index model in which predictions are arrayed and then subdivided into fixed ranges of cost values to form distinct payment groups, or tiers, as we believe this type of approach is better equipped to handle the number of explanatory variables needed to predict NTA costs reasonably well. The tiers which constitute the TNP will be based on average NTA costs as measured from available administrative data. Generally, based on the resident's case mix and the variables selected for predicting NTA costs, if the resident's expected NTA costs exceed a particular threshold, then the facility would be paid a prospective amount, which would be added to the base RNP amount.

c. Non-Routine NTA Outlier Payment

Though we currently lack explicit statutory authority to establish an SNF outlier policy, we are continuing to explore how such a policy could be implemented in the event that we receive statutory authority. Results of the STRIVE study suggest that it is the cost of individual high-cost pharmaceuticals and other NTAs, rather than a particular patient's use of a high volume of NTA services, which creates high NTA costs. Given the effect of specific high-cost items like prescription drugs or respiratory services, it is clear that any type of averaging system (such as the conceptual NTA model discussed here) will not in all cases account for the cost of such items. It will be insufficiently sensitive to high NTA costs deriving from variations among costs of individual medications and ONTAs.

Accordingly, we are currently reviewing the available data to determine how an outlier approach could be designed to address patient-specific expenditures that exceed the routine and non-routine NTA payments that we would make, while allowing for an outlier threshold. While we have not yet fully simulated a potential SNF outlier payment policy, we believe it is appropriate to conduct analysis at the stay level, because NTA utilization can fluctuate significantly during a given SNF stay. Using a stay-level analysis of potential NTA cost outliers would help us to predict NTA costs more accurately over the course of a given SNF stay. Any further developments in this area will be discussed in future rulemaking.

6. Temporary AIDS Add-On Payment Under Section 511 of the MMA

As discussed in section I.E of this proposed rule, section 511 of the MMA amended section 1888(e)(12) of the Act to provide for a temporary increase of 128 percent in the PPS per diem payment for any SNF residents with Acquired Immune Deficiency Syndrome (AIDS), effective for services furnished on or after October 1, 2004. This special AIDS add-on was to remain in effect until "* * * the Secretary certifies that there is an appropriate adjustment in the case mix * * * to compensate for the increased costs associated with [such] residents. * * *" We know, as a result of the STRIVE study and a review of SNF cost data, that SNF residents with AIDS require much greater and more costly care than those without AIDS and that much of this additional cost is the result of NTAs, specifically high-cost medications.

Accordingly, as we have not yet completed work on the NTA component or an SNF outlier policy, we cannot yet determine whether such policy changes would be sufficient to compensate facilities for the costs associated with the treatment of residents with AIDS, in accordance with section 511 of the MMA. We will continue to study the relationship between NTA costs and resource use as they pertain to this population in order to develop an "appropriate adjustment" to account for such costs, as envisioned in the MMA.

IV. Ongoing Initiatives Under the Affordable Care Act

The Affordable Care Act contains a number of provisions that involve ongoing initiatives relating to SNFs. Here, we highlight several of these initiatives.

A. Value-Based Purchasing (Section 3006)

Section 3006(a) of the Affordable Care Act directs the Secretary to develop a plan to implement a value-based purchasing program for SNFs, with a report to Congress due by October 1, 2011. As we discussed previously in the SNF PPS proposed rule (73 FR 25932, May 7, 2008) and final rule (73 FR 46431–32, August 8, 2008) for FY 2009, value-based purchasing programs are intended to tie payment to performance in such a way as to reduce inappropriate or poorly provided care and identify and reward those who provide effective and efficient patient care.

We are in the process of developing the SNF value-based purchasing implementation plan and report. In accordance with section 3006(a) of the Affordable Care Act, we will be consulting with stakeholders in developing the implementation plan, as well as considering the outcomes of any recent demonstration projects related to value-based purchasing which we believe might be relevant to the SNF setting. We anticipate being able to provide further information on the progress of our efforts in future rulemaking.

B. Payment Adjustment for Hospital-Acquired Conditions (Section 3008)

As we discussed previously in the SNF PPS proposed rule for FY 2009 (73 FR 25932, May 7, 2008), "The preventable hospital-acquired conditions (HAC) payment provision for IPPS hospitals is another of CMS' value-based purchasing initiatives. The principal behind the HAC payment provision (Medicare not paying more for healthcare-associated conditions) could be applied to the Medicare payment systems for other settings of care." Section 3008 of the Affordable Care Act amends section 1886 of the Act by adding a new subsection (p) to establish a payment adjustment beginning in FY 2015 for subsection (d) hospitals that fall in the top quartile of national, risk-adjusted HAC rates. For such hospitals, the payment amount under section 1886, section 1814(b)(3), or section 1814(l)(4) of the Act for all discharges would be reduced by 1 percent. Section 3008(b) of the Affordable Care Act goes on to direct the Secretary to conduct a study on expanding the already-existing HAC policy found in section 1886(d)(4)(D) of the Act to payments made in various post-acute settings, including SNFs. In developing this study, the Secretary is directed to include the impact of expanding the HAC policy on patient care, safety, and overall payments.

In accordance with section 3008 of the Affordable Care Act, we are in the process of developing such a study, the outcomes of which are to be reported to Congress no later than January 1, 2012. As with the value-based purchasing program described above, we plan to consult with stakeholders in developing this study, and anticipate being able to provide information on our progress in future rulemaking.

Excerpt from CMS Proposed Rule 73 Federal Register 26364 at page 26381 with some added subtitles for clarification

III. Resource Utilization Groups, Version 4 (RUG-IV)

A. Prospective Payment for SNF Non-therapy Ancillary Costs

1. Previous Research

We have conducted several studies since 1999 to refine the reimbursement methodology for non-therapy ancillary (NTA) services covered by the SNF PPS. At the inception of the SNF PPS, payment for NTA services was included in the 44-group RUG system of case-mix groups. Analysis showed that there was only a weak correlation between NTA services (CMS-1351-P 78) costs and the RUG-III classification group. As the current RUG-IV system, similar to the RUG-III system, has maintained NTA costs coverage as part of the nursing CMIs, we believe that the present methodology for case-mix adjusting the NTA payment amount may not be the most accurate predictor of NTA costs. We are particularly concerned that the present system could underestimate NTA costs for the patients with the highest NTA needs, which could lead to restricted access to care for those patients.

- **FY 2001 Proposed Rule**

As a result of research conducted in the late 1990s, one proposal included in the FY 2001 proposed rule was to modify the RUG system by adding 14 additional RUG groups (65 FR 19193-19194, 19203, April 10, 2000). These additional groups were designed to recognize that patients qualifying for both a Rehabilitation RUG and an Extensive Services RUG incurred NTA costs estimated to be as much as three times higher than those of patients who qualify solely for a Rehabilitation RUG.

- **Abt Research – Validation Failed**

As noted in the 2006 Report to Congress on case-mix refinements (available online at http://www.cms.gov/SNFPPS/Downloads/RC_2006_PC-PPSSNF.pdf), additional research conducted by Abt Associates in the late 1990s experimented with several mathematical models of NTA costs. Results from this work could have practical application as an ancillary "add-on" index based on the (CMS-1351-P 79) beneficiary's predicted, per diem NTA costs. As discussed in the FY 2001 SNF PPS proposed rule (65 FR 19195, April 10, 2000), NTA index models (both weighted and unweighted) were tested after exploring MDS variables that appeared to be predictive of NTA costs. In the unweighted model, cost predictions were based on counts of qualifying patient characteristics (characteristics such as respiratory infection or skin wounds). In the weighted models, a small set of payment groups were defined from "index models" that weighted the predictors where the weights were proportional to the marginal impact of a patient characteristic on estimated NTA costs.

The array of predicted costs generated by the equation could be subdivided into ranges of costs, or intervals, in order to define a small number of payment groups. As discussed in the Technical

Excerpt from AHCA Comments (pp. 53-57) from the Preamble Discussion on Non-Therapy Ancillary Services (NTAS) in the CMS FY 2012 Proposed Rule (pp. 26381-26384)

AHCA Non-Therapy Ancillary Services

(Comments on Section III.A: Prospective Payment for SNF Non-Therapy Ancillary Costs)

AHCA Recommendations on Non-Therapy Ancillary Services (NTAS):

- *AHCA is broadly supportive of CMS' efforts to improve reimbursement for NTAS in the SNF PPS;*
- *AHCA is broadly supportive of CMS' efforts to develop a separate NTAS component and index or reasonable NTAS end-split in the SNF PPS RUG system that:*
  - *Uses information from available SNF administrative data sources;*
  - *Uses variables that are highly predictive of resource use, clinically sensible, and sensitive to patient NTAS utilization;*
  - *Appropriately incentivizes providers;*
  - *Collects additional information from SNF administrative data sources after due consideration and evaluation of the additional information on developing and allocating NTAS payments and provider costs and administrative burdens;*
  - *Includes a base payment for every patient day tht covers the cost of routine NTAS;*
  - *Includes a tiered payment to reflect and better target NTAS payments to patients with high non-routine NTAS costs;*
- *CMS should examine and design the NTAS component such that it reflects and accurately pays for NTAS services particularly those included under consolidated billing;*
- *CMS should examine and design the NTAS component so that it captures and accurately pays for broad classes of high cost drugs or pays based on an annually updated list of high cost drugs administered by the Secretary;*
- *CMS should continue to examine and explore the development of a NTAS component using existing data sources such as MDS 2.0, but the final analysis and design of the NTAS component before implementation should be based on currently used administrative data (i.e. MDS 3.0);*
- *CMS should explore the development of an outlier policy for NTAS including a cost pass through for high cost drugs and equipment; and*
- *CMS should involve stakeholders such as AHCA early in the process to inform the research and provide technical expertise on the development of a modification to the SNF PPS that better aligns NTAS costs with payments*

A. Background

The SNF PPS pays for non-therapy ancillary services (NTAS) through the nursing component of the RUG system. In developing the SNF PPS, CMS determined the approximate percentage of non-therapy ancillary costs included in the nursing component of the urban rate to be 43.4%, and 42.7% of the nursing component of the rural rate.

The SNF PPS does a poor job of reimbursing SNFs for NTAS. Research by MedPAC and for AHCA by the Lewin Group found that the SNF PPS (under RUG-III) explained only about 5% of the variation in stay level NTAS costs. Analysis by the Lewin Group also found that the top 5% percent of NTAS cases are responsible for about 40% of NTAS related expenditures. In addition, analysis by the STRIVE

project found that acuity based on the nursing index explained about one-hundredth of one percent of the variation in daily drug costs. Most importantly, the STRIVE project found that high pharmacy costs are driven not by patient utilization of a large number of drugs but rather by one or two high cost drugs.

B. Basic Principles For SNF PPS NTAS Reform

In the proposed rule, CMS requests comment on the criteria to be used to develop a NTAS component and the proposed conceptual model. Overall, AHCA supports CMS' efforts to develop a separate NTAS component and index or workable NTAS end-split in the SNF PPS RUG system. AHCA is also broadly supportive of the concept that the CMS approach to refining the SNF PPS to better target NTAS costs to payments should:

- Uses information from available SNF administrative data sources;
- Uses predictor variables that are highly predictive, clinically sensible, and sensitive to patient NTAS utilization;
- Appropriately incentivizes providers;
- Collects additional information for SNF administrative data sources with due consideration for the administrative cost and burden of collecting the information and examining least costly and burdensome alternatives;
- Includes or reflects a base payment for every patient day that covers the cost of routine NTAS; and
- Includes or reflects a tiered payment to reflect and better target NTAS payments to patients with high non-routine NTAS costs;

As such, AHCA is, in principlel supportive of an SNF PPS payment system that reflects a base payment for routine NTAS costs, and a limited number of increasingly costly tiers of similarly expensive non-routine NTAS items. CMS could implement this as a separate NTAS component or applied as a routine NTAS component to the nursing or non-case mix weight and a workable NTAS end-split in the SNF PPS RUG system. An outlier policy may be necessary if a tiered system cannot be designed to accurately capture high cost drugs. Alternatively, AHCA could envision an cost pass-through policy for the most expensive drugs rather than an outlier policy, as we see little reason why providers should be paid 80 cents on the dollar for ever more expensive emerging drug regimens.

C. SNF PPS NTAS Reform And Consolidated Billing Issues

AHCA concurs with research conducted for CMS that the highest-cost ancillary services are generally used by a small subset of the SNF population, and that the high and varied cost of individual services or drugs by these populations – rather than the volume of NTAS utilization – can at least partially explain the wide variance in NTAS costs. Another key reason for the wide variation in NTAS costs is related to consolidated billing. CMS should examine the effect of consolidated billing on costs and payments, and design the NTAS component to reflect and accurately pay for NTAS services taking into account site of service issues.

Since the implementation of the SNF PPS, the type of services included in SNF consolidated billing have changed as hospital outsource diagnostic services and free-standing diagnostic centers have proliferated. CMS designed the SNF PPS in an era when SNFs could send patients to hospital outpatient departments for diagnostic services that were billable under Part B. Now, SNFs increasingly send patients to free-standing

diagnostic centers where they bear the full cost of the services because of consolidated billing site-of-service requirements.

For example, for some providers, such as a hospital based SNF or a rural SNF, the SNF may have access to diagnostic services that can be billed by the hospital outpatient department to Part B. The SNF does not incur the cost of the diagnostic service. In other settings or at other times, the SNF may incur the cost of the diagnostic service. If the service is provided in a free-standing outpatient diagnostic center, the cost of the procedure would be borne by the SNF. Additionally, the cost to the SNF for the service could vary based upon the contractual agreement between the two parties from the Medicare fee screen amount up to the diagnostic center's usual and customary charges.

Furthermore, the impact is not consistently applicable. Access to hospital or free-standing diagnostic services could vary depending on the type of service, the day of the week, diagnostic equipment availability, etc. All these issues together make it difficult to determine the total cost for NTAS services, to develop and determine appropriate weights for a tiered non-routine NTAS component, and development of a standard approach for the payment of NTAS across provider types and geographic areas

The site of service issue and the variability issue will skew the NTAS data in unobservable and indeterminate ways. A NTAS system build on incomplete and skewed data could significantly misalign payments for NTAS services, and the misalignment could vary across provider and day to day. This is a serious issue that does not appear to have a ready solution. Getting the absolute and relative NTAS weights and rates right will be difficult with incomplete and unobservable and indeterminate data.

The introduction of additional NTAS related information on the MDS will not resolve the absolute and relative weight problem. It will only assist in developing a NTAS system that pays at the right NTAS tier, and not whether the absolute and relative weighting for that tier is right. Implementation of a NTAS system using current information to define and weight the tiers and using additional MDS data to identify the NTAS cost drivers as well as resolve the consolidated billing related issues is possible. CMS needs to take into consideration all factors and implications of the numerous scenarios related to SNF consolidated billing and to assure that the current inconsistencies in payment and financial responsibility be addressed in the development of options to modify the payment for SNF Part A NTAS.

D. MDS 3.0, RUG-IV And SNF PPS NTAS Reform

CMS NTAS models and associated outlier models will need to be revised and updated before they can be implemented in a MDS 3.0 / RUG-IV based SNF PPS. Without updating, CMS will continue to make payments for NTAS at inappropriate levels, particularly as providers modify practices in response to changing policies, requirements and incentives under the evolving RUG-IV SNF PPS. While current research can help develop the basic structure for improved payments under a SNF PPS for NTAS, the exact formulation of the components, associated relative payments between tiers, and the appropriate allocation of costs and payments between routine, non-routine and outlier portions of NTAS could vary considerably depending on data under the new payment structures.

E. NTAS Reform And The Nursing Component

In the proposed rule, CMS indicates that payments associated with a new NTAS component of the SNF PPS would be financed by reallocating the portion of the current nursing component which has been previously considered to account for NTAS costs. Payment redistributions resulting from a shift of NTAS related payments out of the nursing component into a new NTAS component increase the

importance of getting the nursing weights right. Similarly, establishment of an outlier policy for NTAS would shift payments from low NTAS utilization facilities to high NTAS utilization facilities. Though it may result in an improvement in SNF PPS payment accuracy, it again shifts funds and increases the importance of having the nursing component weights accurately reflect relative routine costs. CMS should examine and evaluate whether a revised and improved STRIVE like study could help to ensure that the nursing weights are "right."

We would also recommend that CMS test its final NTAS payment model for payment compression. By this we mean the extent to which the system pays accurately at the extremes of low and high cost cases. This is particularly important for NTAS costs as they are unevenly distributed to a few cases. Compression can be checked in two ways. First the facility level CMI regression coefficient should be about 1.0. This means that as CMI increases 10%, costs also rise 10%. Another test for payment compression is to predict payments for high cost cases and determine the ratio of predicted payments to actual costs. Again, prediction ratio of 1.0 Is ideal. MedPAC has advanced both of these standards.

F. AHCA And NTAS Reform

AHCA is interested in getting NTAS reform right. The SNF PPS does a poor job of reimbursing SNFs for NTAS. AHCA is encouraged that CMS is working to establish proper and appropriate incentives for SNFs and to improve the SNF PPS to better align NTAS costs and payments. As with other changes to the RUG system, CMS should implement NTAS reforms to the SNF PPS in a budget neutral manner. AHCA is interested in working with CMS to reform NTAS. CMS should involve stakeholders such as AHCA early in the process to inform the research and provide technical expertise to improve payment for NTAS.

Appendix to the FY 2001 proposed rule (65 FR 19240, 19248, April 10, 2000), variations were created by applying the index models to alternative sets of RUG groups. As further discussed in the FY 2001 proposed rule (65 FR 19196), we proposed a separate unweighted NTA index to be applied to certain RUG categories based on clinical variables on the MDS. In addition, to facilitate the incorporation of this proposed refinement into the case-mix classification system, we proposed to create a new component of the payment rates for NTA services (65 FR 19192). (CMS-1351-P 80).

As explained in the FY 2001 SNF PPS final rule (65 FR 46773, July 31, 2000), while the expanded RUG groups approach and the NTA index approach initially appeared to improve payment accuracy in comparison to the existing case-mix system, ***attempts to validate the results on a later national PPS data set did not confirm the initial findings***. As a result, we did not finalize the proposals made in April 2000.

- **Urban Institute Building on Abt FY 2006 Final Rule -- From 44 to 53 RUG Groups**

We sponsored subsequent research by the Urban Institute using claims samples from 2001. This work led to the FY 2006 final rule (70 FR 45026, 45030-34, August 4, 2005), which essentially implemented a variation of the 58-group RUG proposal developed by Abt Associates discussed above. In that rule, we finalized a system composed of 53 groups, by augmenting the original 44-group system with nine additional groups identifying patients simultaneously qualifying for the Extensive Services and Rehabilitation groups. This incremental change to the grouping system was accompanied by an across-the-board increase in the case-mix weights for the payment component that includes NTA costs. Both of these modifications were intended to enable the original RUG-III payment model to account more accurately for variation in NTA costs.

Using the 2001 data set, the Urban Institute also experimented with prediction models that were extensions of (CMS-1351-P 81) the original Abt Associates NTA index approaches. A small number of additional variables (for example, age) and improvements to the methodology used to measure independent variables in the data base led to potential improvements over the earlier model.

The Urban Institute also explored substantially more complex models that incorporated variables derived from qualifying hospital stay claims; these models were estimated separately for patients after subdividing them into one of three groups: acute, chronic, or rehabilitation.

- **MedPAC Sponsors Work by Urban in 2008, Medicare Data from 2003**

In 2008, the Medicare Payment Advisory Commission (MedPAC) sponsored analyses by researchers from the Urban Institute extending some of the Institute's earlier work. This led to a MedPAC proposal that was based on the most promising results of the Institute's earlier work. The study used 2003 Medicare data. It resulted in a prediction equation for NTA services that used a large number of variables derived from the MDS assessments and hospital claims (for example, diagnosis), a measure of length of stay, as well as patient age (Bowen Garrett and Douglas A. Wissoker, "Modeling Alternative Designs for a Revised PPS for Skilled Nursing

Facilities: A study conducted by staff from the Urban Institute for the Medicare Payment Advisory Commission," June, 2008; available online at http://www.medpac.gov/documents/Jun08_SNF_PPS_CONTRACTOR_CC CMS-1351-P 82 .pdf).

MedPAC did not propose a system of NTA case-mix groups based on the prediction equation. However, the basic equation could be used to generate an array of predictions in the population and to group the predictions into cost intervals for defining a smaller number of payment groups. This is the same approach that Abt Associates took with its index model.

- **Urban Refines Effort in 2010**

In a June 2010 memo to MedPAC (available online at http://www.medpac.gov/documents/Oct10_SNF_NonTherapyAncilla ry_CONTRACTOR_CC.pdf), the Urban Institute described a series of refinements to MedPAC's 2008 proposed model. Most importantly, with their 2010 model, the Urban Institute sought to reduce the number of indicators from nearly 70 and ensure that all indicators are derived from information based on available administrative data. Additionally, when the Urban Institute used 2007 SNF data files (as compared to the 2003 data files used to support the previous model), they found that the predictive ability of the model was reduced slightly from 23 percent to 21 percent.

After completing a revised statistical analysis and eliminating indicators for conditions that were either relatively rare or had little impact on NTA costs, the Urban Institute advanced a 20-variable "streamlined" model that maintained almost equivalent predictive accuracy to (CMS-1351-P 83) MedPAC's 2008 proposed model described above. The streamlined model included many of the "high-impact" variables contained in the 69-variable model, such as IV medication use and respiratory services. Additionally, the streamlined model included variables suggested by CMS, such as the nursing case-mix index and the MDS diabetes diagnosis, which were also found to be strong indicators of anticipated NTA costs.

2. Conceptual Analysis

Based on our initial research, we continue to believe that an administratively feasible and equitable approach to prospective payments for NTA costs would incorporate the following criteria:

- Uses information from available administrative data (data available on claims or on the MDS assessment);
- Uses predictor variables that represent meaningful correlates of NTA services that are highly predictive, clinically sensible, sensitive to patient NTA variation, and do not promote undesirable incentives for providers;
- Is developed by using the best and most recently available data sources, in order to assure that it reflects current care practices and resource utilization;

- Results in a separate NTA component and index that uses a minimal number of payment groups, or tiers, to limit the complexity of the SNF PPS as a whole; and (CMS-1351-P 84) and
- Uses payment groups and predictor variables that are readily understandable and clinically intuitive.

These criteria and our initial research intent were discussed in the FY 2010 SNF PPS proposed rule (74 FR 22238 through 22241, May 12, 2009), and responses to comments on this initial research proposal were part of the FY 2010 SNF PPS final rule (74 FR 40341 through 40342, August 11, 2009). These comments helped to guide our initial research to develop the conceptual model discussed in this proposed rule.

In addition to the criteria specified above, our research is also guided by the results of multiple recent studies, such as those conducted by the Urban Institute, regarding the relationship between NTA utilization and resident condition. Most relevant to our work in this area, these studies suggest that the highest-cost ancillary services (such as respiratory services, enteral and parenteral feeding, and treatment of chronic conditions, such as AIDS) are used by a small subset of the SNF population, and that the high and varied cost of individual services or drugs by these populations--rather than the volume of NTA utilization--can at least partially explain the wide variance in NTA costs.

To continue our analytic work for developing a payment methodology for NTA costs, we have utilized a large (CMS-1351-P 85) analytic data file that combines Medicare SNF claims, cost reports, and MDS assessments from FY 2007. The file has been used to study relationships between reported claims charges for NTA-related revenue centers and predictor variables defined from items on the MDS. We augmented the analytic file with diagnosis information from the patient's qualifying hospital stay as a way of compensating for potentially incomplete diagnosis reporting on MDS and on SNF claims. (As noted earlier, it is not our intention to use hospital-assigned diagnoses directly in any tiered system we may propose.)

Because three-quarters of the NTA costs are pharmacy-related, we have summarized the patient's recent diagnoses using the diagnosis classification system CMS developed for Medicare Part D risk adjustment. This is known as the RxHCC system. The RxHCC system was developed from the Hierarchical Condition Categories (HCCs) used for risk-adjustment in Medicare Part C. We also continue to examine the performance of the diagnosis flags from Section I of the MDS.

Now that more recent data are available, we are developing a similar file using FY 2009 data, which may be used to test our initial model formulas and monitor any recent changes to NTA utilization patterns. We solicit comment on the criteria specified above and the conceptual model discussed in the following sections. (CMS-1351-P 86).

3. Analytic Sample – CMS Work FY 2007 Cost Reports With Part A Claims

To develop the analytic sample, we linked FY 2007 SNF cost reports with SNF Medicare Part A claims covering services delivered during the SNF's cost reporting period. The actual cost of the

NTA services is determined by adjusting claims charges for NTA services in accordance with cost-to-charge ratios (CCRs) from the cost report. The NTA costs are then used as the dependent variable in all subsequent analyses, while MDS items and claims diagnoses act as the independent variables. We collected all claims, and used only those claims submitted within the reporting period for the cost reports available. Requiring a matched cost report eliminated some SNFs represented in the 2007 National Claims History. The SNFs that do not meet this threshold tend to be smaller SNFs, though this requirement does not adversely affect the representativeness of the analytic sample.

- We have studied the same three general categories of NTAs as previous research has suggested:
- Respiratory-related costs (for example, ventilator services),
- Drug-related costs, and
- Other non-therapy ancillary (ONTA) costs (for example, wound dressings).

We derive category-specific CCRs for each facility's cost report remaining in the sample. An additional requirement for an SNF to be in the sample is that it reports some drug (CMS-1351-P 87) and ONTA charges on the claims; otherwise, the facility's data may not be accurate enough to be used in the sample. Positive respiratory charges are not necessary, as these types of charges are not always reported. One reason is that some respiratory charges, such as oxygen-related supplies, are reported as ONTAs, based on certain reporting standards.

We trimmed the sample to eliminate facilities with extreme values for CCRs, as outlying CCRs could skew the results of our analysis. Finally, we compared the drug and ONTA charges on the claims to the SNF's cost report drug and ONTA charges, since wide differences could be the result of incomplete or inaccurate reporting. Facilities that were found to exhibit such wide differences were dropped from the sample. For our analysis, accurate charge reporting is critical for the measurement of our dependent variable, CCR-adjusted NTA charges.

4. Approach to Analysis

The dependent variable in our analysis is the NTA charges, adjusted by CCRs. The independent variables are diagnosis groupings and variables selected from the matched MDS assessments. With the recent implementation of the MDS 3.0, we will monitor any changes in our selected set of variables and, based on research conducted as part of the Post Acute Care Payment Reform Demonstration (PAC-PRD), we CMS-1351-P 88 may explore changes to the MDS assessment which would allow us to collect more detailed information on NTA costs and utilization. ***However, as our current analytic database is based on FY 2007 and FY 2009 data, our analysis still utilizes the MDS 2.0.*** The following sections of the MDS 2.0 contribute variables to be tested for their predictive value:

E: Mood and Behavior Problems
G: Physical Functioning and Structural Problems
H: Continence in Last 14 Days
I: Disease Diagnoses
J: Health Conditions

K: Oral/Nutritional Status
L: Oral/Dental Status
M: Skin Condition
O: Medications
P: Special Treatments and Procedures

Our study of the ability of particular MDS items and diagnosis groupings to predict NTA costs builds on previous research discussed above and adheres to the criteria outlined earlier in this section. Now that we have completed the initial phase of this research, we are in a better position to understand the relationship between NTA costs and certain classes of illness. Understanding these relationships has led us to explore potential groupings of CMS-1351-P 89 conditions, distinct from the RUG classification or qualifying hospital condition, which could suggest a feasible system for NTA payment tiers.

5. Payment Methodology

The payments associated with a new NTA component of the SNF PPS would be financed by reallocating that portion of the current nursing component which has been previously considered to account for NTA costs. Our intent in adding a separate NTA component, distinct from the nursing component, would be to provide greater predictive ability, promote more equitable NTA reimbursement, and achieve a more cost-effective payment structure for SNFs. The NTA payment would be broken into two parts: a routine NTA bundled payment (RNP) and a tiered non-routine NTA payment (TNP).

a. Routine Non-Therapy Ancillary Payment

The RNP would constitute a base payment for every patient day, distinct from the tiered NTA payment described below and separate from the nursing component, to cover the cost of routine NTA services (drugs, laboratory services, etc.) that are commonly given to a wide range of SNF patients. CMS is currently analyzing SNF claims data linked to specially collected data from Medicare research projects, such as the STRIVE study and the PAC-PRD project, to help determine the specific drugs and services that (CMS-1351-P 90) would be included in the RNP and an appropriate per diem amount to cover their purchase and administration. Examples of such routine NTAs could include:

- High blood pressure medication
- Common analgesics,
- Anti-infective agents,
- Sleep aids,
- Laxatives, and
- Standard blood tests,
- Among others.

The RNP would help capture the daily cost of administering these types of routine NTAs, thereby allowing for a more clearly defined and appropriate tiered NTA bundled payment to cover non-routine NTA services, as well as a more transparent payment for such routine costs

incurred by providers. We also believe that, in conjunction with a possible NTA outlier policy (discussed below), having an RNP component would limit the administrative burdens associated with reporting that might be required to administer outlier payments.

As with the other components of the SNF PPS, the RNP piece of the NTA component would be updated annually to account for changes in the market basket and other relevant adjustments. It would operate in much the same way as the non-therapy non-case mix adjusted component of the current SNF PPS, in that it would constitute a flat amount added to the payment for all applicable SNF claims.

b. Tiered Non-Routine NTA Bundled Payment

The TNP would operate as a variation of the model previously discussed in the FY 2001 SNF PPS proposed rule CMS-1351-P 91 (65 FR 19188, April 10, 2000). Specifically, we are in the process of developing a tiered NTA bundled payment, where payment tiers track relative variations in NTA costs and utilization.

The June 2008 Urban Institute report referenced above (Garrett and Wissoker, June 2008) suggested that average wage-adjusted per diem NTA costs were approximately $68, with a standard deviation of $94, which would support the use of multiple case-mix-adjusted tiers.

The TNP is designed to capture the average cost of the drugs and services, given the patient's clinical characteristics, excluding the drugs and services covered by the RNP or those already excluded from the SNF PPS altogether under the consolidated billing requirements. Such a cost schedule and tier structure is currently under development, using recent Medicare Part A claims data and data from the PAC-PRD.

We have focused on developing an index model in which predictions are arrayed and then subdivided into fixed ranges of cost values to form distinct payment groups, or tiers, as we believe this type of approach is better equipped to handle the number of explanatory variables needed to predict NTA costs reasonably well. The tiers which constitute the TNP will be based on average NTA costs as measured from available administrative data. Generally, CMS-1351-P 92 based on the resident's case mix and the variables selected for predicting NTA costs, if the resident's expected NTA costs exceed a particular threshold, then the facility would be paid a prospective amount, which would be added to the base RNP amount.

c. Non-Routine NTA Outlier Payment

Though we currently lack explicit statutory authority to establish an SNF outlier policy, we are continuing to explore how such a policy could be implemented in the event that we receive statutory authority. Results of the STRIVE study suggest that it is the cost of individual high-cost pharmaceuticals and other NTAs, rather than a particular patient's use of a high volume of NTA services, which creates high NTA costs. Given the effect of specific high cost items like prescription drugs or respiratory services, it is clear that any type of averaging system (such as the conceptual NTA model discussed here) will not in all cases account for the cost of such

items. It will be insufficiently sensitive to high NTA costs deriving from variations among costs of individual medications and ONTAs.

Accordingly, we are currently reviewing the available data to determine how an outlier approach could be designed to address patient-specific expenditures that exceed the routine and non-routine NTA payments that we would make, while allowing for an outlier threshold. While we have not (CMS-1351-P 93) yet fully simulated a potential SNF outlier payment policy, we believe it is appropriate to conduct analysis at the stay level, because NTA utilization can fluctuate significantly during a given SNF stay. Using a stay-level analysis of potential NTA cost outliers would help us to predict NTA costs more accurately over the course of a given SNF stay. Any further developments in this area will be discussed in future rulemaking.

Attachment D

AHCA SNF Cuts Overview Document

MEDICARE CUTS

	2010	2011	2012	2013	2014	2015	TOTAL
Affordable Care Act Productivity Adjustment			$419 million	$746 million	$1.030 billion	$1.637 billion	$3.832 billion
Sequestration				$600 million	$855 million	$957 million	$2.412 billion
Bad Debt				$230 million	$245 million	$264 million	$739 million
Therapy MPPR Cuts		$228 million	$229 million	$489 million	$634 million		$1.580 billion
Regulatory Changes* Forecast Error Cut		$261 million	$250 million	$261 million	$519 million	$1.743 billion	$3.034 billion
Regulatory Changes* Payment Formula Changes	$2.244 billion	$2.615 billion	$2.507 billion	$2.613 billion	$2.780 billion	$2.995 billion	$15.754 billion

* 2006 Non-Therapy Ancillary Case Mix Index Refinement; 2006 Elimination of Add-On; 2010 Recalibration of Case Mix Indexes

TOTAL: $27.351 billion

Medicaid Underfunding	$6 billion	$7 billion	$7 billion	$7.7 billion			$26.6 billion
	2019	2020	2021	2022	2023	2024	2019-2024
SNF Rehospitalization Withhold	$300 million	$300 million	$300 million	$400 million	$400 million	$400 million	$2 billion

GRAND TOTAL: $55.951 billion

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