2021

The Relationship Between Quality Score, Generated Savings/ Losses and Assigned Beneficiaries Among 2018 MSSP ACOs

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This is to certify that the doctoral study by

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has been found to be complete and satisfactory in all respects,
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Abstract

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MS, University of Central Florida, 2012

BS, University of Central Florida, 2009

Doctoral Study Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Healthcare Administration

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Abstract

In 2018, Medicare spending in the United States accounted for 15% of the comprehensive federal budget forecasted to exceed $1.5 trillion by the year 2028. To help manage the spending in this sector, the Centers for Medicare and Medicaid Services implemented Medicare Shared Savings Program (MSSP) Accountable Care Organizations (ACOs). There is a need to understand current data as it relates to the correlation between MSSP ACO participants' costs, quality, and assigned beneficiaries. The purpose of this quantitative study was to examine the relationship between Quality Score, Generated Total Savings/Losses and Total Assigned Beneficiaries for 2018 MSSP ACO participants. General systems theory was the theoretical base that grounded and conceptualized this study. The key research questions examined the relationship between the Quality Score and Generated Total Savings/Losses for 2018 MSSP ACO participants and the relationship between the Quality Score and Total Assigned Beneficiaries for 2018 MSSP ACO participants. The research design was that of secondary data quantitative analysis. The analytics stem from public CMS data. Even though the data analysis results showed no statistically significant relationship between Quality Score and Generated Total Savings/Losses nor between Quality Score and Total Assigned Beneficiaries for 2018 MSSP ACO provider participants, this study contributed to positive social change by creating a new vantage point for review of their quality, costs, and assigned beneficiaries. The development and understanding of ACO initiatives are essential pieces required for meeting federal value-based care and alternative payment model U.S. health care goals.

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Dedication

I dedicate this work to all lifelong learners, academics, and professionals in healthcare administration and beyond. We must all yearn to grow and expand our knowledge – always.

Acknowledgments

First and foremost, I thank God for the talents I have been blessed with and the amazing people I am humbled to hold as family and friends. Secondly, I extend endless gratitude to my mom and dad (Lisa and Tom Walsh) and sisters (Tiffany and Victoria Walsh) for their constant, consistent, and compassionate belief that I can accomplish anything I set my mind to. Their names belong cemented in this work just as much as mine does. Through the years, my entire extended family has cheered me on as I've progressed through my educational endeavors; all while loving me unconditionally. Last, but most certainly not least, I thank my best friend and husband, Brent, for his immense love, continued support, unwavering partnership, camaraderie, and friendly competition throughout our concurrent respective doctoral processes. Words cannot express how extremely proud I am that we are now Drs. Mr. and Mrs. Crider!!! Additionally, I extend the most humble and kind gratitude to Dr. Matt Frederiksen-England, Dr. Donna Clews, Dr. Cheryl Cullen, and Dr. Zin Htway of Walden University for their assistance in this arduous process. I experienced the full spectrum of emotions during this doctoral process, but their unwavering support kept me going.

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Section 1: Foundation of the Study and Literature Review

Fragmentation and misalignment in the U.S. health care system created an opportunity for reforms of its payment and delivery methods. Traditionally, U.S. health care has reimbursed providers via fee-for-service (FFS) payment structures. FFS has had an unintended consequence of incentivizing volume (or increasing number) of services over quality, outcomes-based, or higher value services. There have been various historical attempts to rein in health care costs while concurrently increasing quality; with a goal of improving overall delivery. As an example, the overarching Accountable Care Organization (ACO) model has a modern goal of improving population health and reducing per capita costs (Tu et al., 2015). The Centers for Medicare and Medicaid Services (CMS) created ACOs in Section 3022 of the Patient Protection and Affordable Care Act (ACA) of 2010 as an Alternative Payment Model (APM) to begin the shift of the U.S. health care environment from volume to value. Title 42 CFR Part 425 (2018) outlined the requirements for participation in the Medicare Shared Savings Program (MSSP).

As detailed in the literature review, Medicare ACOs have various strategies in terms of the different offerings and participation numbers in each performance year. The MSSP is the largest ACO developed to date. No termination currently exists for MSSPs. On the contrary, MSSPs have been further recognized and empowered via the passing of the Medicare Access and Children's Health Insurance Program (CHIP) Reauthorization Act (MACRA) of 2015. The MACRA's Quality Payment Program (QPP) includes a component of achievement that relies on MSSPs being successful (TXCIN, 2018).

In 2013, the CMS implemented the MSSP, a years-long strategy and multipronged approach to help reform Medicare and ensure the sustainability of the sector. In essence, MSSP ACOs agree to be accountable for the patient experience, cost, and quality of their assigned Medicare FFS beneficiary population. (TXCIN, 2018).

Spending on Medicare is nearly one fifth of total U.S. health care costs (Cubanski et al., 2019). To help better manage the spending of the Medicare sector of the U.S. health care industry for taxpayers and concurrently promote high-quality care for beneficiaries, the CMS has implemented MSSP ACOs (CMS, 2019). This study reviewed the Total Assigned Beneficiaries, Generated Total Savings/Losses and Quality Score of 2018 MSSP ACOs. This study needed to be conducted on a micro level to note the 2018 performance year relationship of quality and cost indicators for the managed population of the MSSP. On a macro level, this study needed to be conducted to understand the impact MSSPs are having on the overarching U.S. health care goals to increase quality and decrease costs for managed populations in the Medicare space, moving more towards value-based care. The positive social changes of this study include understanding the relationship between quality, cost, and total assigned beneficiaries and related movement toward value-based care in terms of lowered costs and increased quality for the U.S. health care system, specifically stemming from 2018 MSSP ACOs. From a quality perspective, this is critical for Medicare beneficiaries, and from a cost perspective, this is important for U.S. taxpayers.

The major sections of this chapter include (a) Problem Statement; (b) Purpose of the Study; (c) Research Questions and Hypotheses; (d) Theoretical Foundation of the

Study; (e) Nature of the Study; (f) Literature Search Strategy; (g) Literature Review Related to Key Variables and Concepts; (h) Definitions; (i) Assumptions; (j) Scope and Delimitations; and (k) Significance, Summary, and Conclusions.

Problem Statement

Per the U.S. Department of Health and Human Services (DHHS, 2019), Medicare spending is forecasted to exceed $1.5 trillion by 2028. Medicare-specific costs account for about 20% of the total health spending nationwide. In 2018, Medicare took up an estimated 15% of the comprehensive federal budget (Cubanski et al., 2019). To manage the spending of this sector of the U.S. health care industry for taxpayers and concurrently promote high-quality care for Medicare beneficiaries, the CMS has reviewed new and innovative ways to move away from FFS with a focus toward value-based care payment models. The payment models seek to reward providers for the overall value (measured by decreased cost and improved quality) of health care services. To date, although the CMS has implemented an array of APMs to achieve its goals, the MSSP, founded in 2010, is one of the center's largest APMs to encourage cost efficient and quality care services (CMS, 2019). Mostashari and Broome (2016) reported that there is still much debate over whether ACOs have been successful in delivering value. Wegner (2016) defined health care value as a measurement of the quality of care and cost of care. Falk (2016) noted that if the CMS is sincerely interested in seeing Medicare reimbursements tied to value, confidence in the future of MSSPs must be instilled; additional research can work to reveal whether it takes further participation in accountable care to realize the full effects that coordination efforts can have on the cost and quality of U.S. health care.

Previous research has shown that there is a need to understand future years' data (Falk, 2016) as it relates to whether MSSP ACO participants render health care services to their total assigned beneficiaries that are of lower cost (i.e., by means of generated CMS cost savings) and higher quality (i.e., determined via established benchmarks and quality improvement efforts), thereby demonstrating a gap in research. Falvey (2017) mentioned that health care leaders who have launched ACOs, or debate the future of population health, need results generated from studies such as this to maintain current ACOs and their strategic approach while also potentially demonstrating the need to establish additional ACO-like initiatives. The development of ACOs is the essential piece required for managing an assigned beneficiary pool via population health management. MSSP ACOs were established by the ACA to implement initiatives aimed at reducing costs and improving care for an assigned beneficiary pool (Corder, 2018). Perez (2015) posited that ACOs have the most significant potential to concurrently lower costs and improve quality. This research is important to the health care administration discipline for many reasons, but most importantly, to understand the relationship between costs, quality, and assigned beneficiaries within MSSP ACOs, specifically in the 2018 performance year.

Purpose of the Study

This study utilized a secondary data quantitative approach to address the research questions. The statistics consisted of public data from CMS, a federal resource, for the MSSP ACO 2018 performance year. This allowed me, as the scholar-practitioner, to employ recent data via a standard analytical file that was used to efficiently summarize

information for beneficiaries and providers for the specific ACO 2018 performance year of the MSSP. The research demonstrated that MSSP ACOs are an avenue that can be utilized to ensure lower costs and increased quality as it relates to serving the Medicare FFS population. With a national gross domestic product (GDP) of nearly 20% (Cubanski et al., 2019), the United States must roll back the unconscionable costs and crouched quality that resides in its health care renderings to ensure sustainability and affordability for the entire system; innovation in the Medicare space is critical to the larger goal.

The purpose of this quantitative study, which differentiates it from others published, was to understand the relationship between Quality Score and Generated Total Savings/Losses within MSSP ACO participants in the 2018 performance year and to understand the relationship between Quality Score and total assigned beneficiaries within MSSP ACO participants in the 2018 performance year. The literature notes that MSSP ACOs are a viable option for U.S. health administrators to reach systemic goals due to their effect on cost and quality; they can not only save the federal government, revenue via taxpayers, billions of dollars as years progress and initiatives become more innovative and collaborative, but also ensure care quality is enhanced (National Association of ACOs, 2018). The need for this study lay in noting the relationship between certain variables to review and understand how MSSP ACOs can improve quality and costs savings, allowing for further expansion of accountable, value-based care.

Table 1

CMS Variables with Short and Long Descriptions

CMS variable	CMS short description	CMS long description
N_AB	Total assigned beneficiaries	Number of assigned beneficiaries, performance year
GenSaveLoss	Generated total savings/losses	(Gross) Generated savings: Total savings (measured as Benchmark Minus Expenditures, from first to last dollar) for ACOs whose savings rate equaled or exceeded their Minimum Savings Rate (MSR). This amount does not account for the application of the ACO's final sharing rate based on quality performance, reduction due to sequestration, application of performance payment limit or repayment of advance payments. (Gross) Generated losses: Total losses (measured as Benchmark Minus Assigned Expenditures, from first to last dollar) ACOs in Track 2, Track 3, or the Track 1+ Model whose losses rate equaled or exceeded their Medical Loss Ratio (MLR). This amount does not account for the application of the ACO's final sharing rate based on quality performance (for Track 2 or 3 ACOs) or the loss sharing limit.
QualScore	Quality score	Quality score: In Performance Year 1 of an ACO's first agreement period, the quality score is 100% if all measures were completely reported and less than 100% if one or more measures were not completely reported. Beyond Performance Year 1 of an ACO's first agreement period, the quality score will be determined not only by whether all measures were completely reported but also on their performance against established benchmarks and on quality improvement. For ACOs determined to have been affected by a natural disaster, the quality score is the higher of the ACO's calculated initial quality score or the national mean quality score across all Shared Savings Program ACOs who met the quality performance standard.

Note. (Centers for Medicare & Medicare Services, 2020)

The study's variables were Generated Total Savings/Losses, Quality Score, and Total Assigned Beneficiaries. For Research Question 1 (RQ1), the study's independent variable (IV) was Quality Score and the dependent variable (DV) was Generated Total Savings/Losses in the 2018 MSSP ACO performance year. For Research Question 2 (RQ2), the study's independent variable was Total Assigned Beneficiaries and the dependent variable was Quality Score in the 2018 MSSP ACO performance year. The definitions of variables are presented in Table 1 and in the Definitions section of this study.

ACO Tracks (inclusive of Track 2, starting in 2012, and Track 3, starting in 2016) vary in terms of their financial structures, beneficiaries, data and quality reporting requirements, compliance, and waivers. Medicare requires ACOs to report the quality measures which are composed of 33 nationally recognized measurements in four categories: patient experience, care coordination/patient safety, preventative health, and five different at-risk populations. Afterward, the Quality Score is determined not only by whether measures were completed reported or not, but also on the ACO's performance against certain quality improvement initiatives and established benchmarks (CMS, 2020).

Research Questions and Hypotheses

RQ1: Is there a statistically significant relationship between the Quality Score and Generated Total Savings/Losses for 2018 Medicare Shared Savings Program Accountable Care Organization participants?

$H_0$1: There is no statistically significant relationship between the Quality Score and Generated Total Savings/Losses for 2018 Medicare Shared Savings Program Accountable Care Organization participants.

$H_1$1: There is a statistically significant relationship between the Quality Score and Generated Total Savings/Losses for 2018 Medicare Shared Savings Program Accountable Care Organization participants.

RQ2: Is there a statistically significant relationship between the Quality Score and Total Assigned Beneficiaries for 2018 Medicare Shared Savings Program Accountable Care Organization participants?

$H_0$2: There is no statistically significant relationship between the Quality Score and Total Assigned Beneficiaries for 2018 Medicare Shared Savings Program Accountable Care Organization participants.

$H_1$2: There is a statistically significant relationship between the Quality Score and Total Assigned Beneficiaries for 2018 Medicare Shared Savings Program Accountable Care Organization participants.

Theoretical Foundation for the Study

General systems theory (GST) is the theoretical base that grounded and conceptualized this study. Von Bertalanffy (1968) wrote that a system is complex with interacting elements, continually evolving parts, and emerging properties. GST covers broadly applicable concepts and principles in dynamic and active systems with behavioral and process-based interactions. The theory allows the researcher to review the various layers that exist in the system to relate them and study their intersecting trends

and patterns. GST is a framework that can be used to help understand, design, and analyze ways to investigate how value-based care may help improve the U.S. health care system and understand the relationship among the related variables such as quality, cost, and beneficiaries. The theory can help examine specific MSSP ACO performance years and note how those ACOs behave in the ever-changing health care environment, specific to quality, costs, and beneficiaries.

In this particular study, the way quality, cost of care and assigned population push and pull on each other in the overall system were studied in terms of their interrelatedness and their interdependence in health care to better understand effects on affordability and sustainability. The advent of MSSP ACOs has created an avenue of accountability whereby Medicare costs can arguably be contained and measured, and actionable insight can be offered via coordination and the encouragement of investing in efficient services (CMS, 2019). This layer of an already complex overarching system will give rise to picking apart specific quality, cost and beneficiary data that can be extracted to understand the relationship and positively impact the whole. The variables of this study were related to GST in part because although there are multiple outcomes that MSSP ACOs measure to ensure efficient, coordinated care, quality scores are key clinical metrics with various elements that have a relationship with costs and assigned beneficiaries and an effect on the overall system. A competitive strategic approach for health care administrators leading various health care organizations is in many ways dependent on properly understanding the relationship of quality and cost measures to the population under organizational management (Arsita & Idris, 2019).

Nature of the Study

For this study, I used a secondary data quantitative approach to address the two research questions. The data statistics consisted of public data from CMS, a federal resource, for the MSSP ACO 2018 performance year. This allowed me to employ recent data via a standard analytical file that I used to efficiently summarize information for beneficiaries and providers for the specific performance year of the MSSP. This research study noted the relationship amongst cost, quality and beneficiaries and yielded thoughts and potential further research on the notion that MSSP ACOs can help lower costs and increase quality as it relates to serving the U.S. Medicare population. Since nearly one fifth of the U.S. GDP is spent on healthcare (Cubanski et al., 2019), the nation must find more innovative, sustainable, and affordable ways to render health care services. Understanding the relationship between Quality Score, Generated Total Savings/Losses and Total Assigned Beneficiaries can serve as a tool in the overarching review of MSSP ACOs as an innovative opportunity to ensure sustainability and affordability of the U.S. health care system.

Literature Search Strategy

Selected articles related to the study were found by searching keywords and/or phrases such as *CMS MSSP ACOs*, *Medicare Shared Savings Program*, *accountable care*, *Accountable Care Organizations*, *value-based care in U.S.*, *Medicare payment innovation*, *alternative payment models*, *quality*, *cost*, *attributed beneficiaries*, *Total Assigned Beneficiaries*, *Generated Total Savings/Losses*, and *Quality Score*. Databases used included, but were not limited to, EBSCOhost, CINAHL Plus with Full Text,

MEDLINE with Full Text, ProQuest, and Science Direct. The scope of the literature review spanned the years from 2015 to 2020. The types of literature used for this study were peer-reviewed journal articles, reputable online and textbook works, as well as esteemed commissions by distinguished, prominent, and renowned authors.

Literature Review Related to Key Variables and Concepts

In reviewing the literature as it relates to accountable health care in the U.S., I analyzed peer-reviewed journal articles, dissertations, doctoral and master-level studies, and other scholarly resources on the topic of accountable and value-based care; specifically, transformation, initiatives, realizations, evolution and MSSP ACO relationships.

Accountable Care Transformation

Fundamentally, the U.S. health care system has, for years, had perverse incentives. Providers have been paid based mostly on the volume of services rendered and when patients become/are sick. As a result of this historical volume-driven utilization model, a new wave of outcome (or value)-based agreements is emerging from not only Medicare payment methods, but also various commercial, Medicaid, as well as other health plans and managed care organizations. These advents include quality measurement and shared financial savings/losses with providers. When providers participate in value-based health care models, there is an innate risk, sometimes inclusive of upside and/or downside financial agreements. However, if and/or when providers accept the risk, they will recognize that there is a correlated opportunity for greater incentives (Mostashari, 2018).

Secretary of DHHS, Alex Azar, has declared that rendering value-based health care in the United States must dramatically accelerate to deliver health care outcomes commensurate with current and future health care costs (Leonard, 2018). Azar has made it clear that the current, aforementioned volume-based, system is not working well enough for Medicare beneficiaries nor taxpayers, and the U.S. health care system must make more than just incremental steps in disrupting arrangements that currently exist (Leonard, 2018). Failure to successfully incorporate accountable care into the overarching system will likely result in monetary losses, less access to care for patients as well as reduced quality of care (Pierce, 2018).

Historically, there have been mixed results in the research regarding population health and its related impact and sustainability in terms of meeting cost and quality goals, as noted in Leighton's (2019) research on the provider and organizational response to population health management initiatives. In the qualitative study, Leighton used Medicare administrative claims data, observations, interviews, and document reviews to understand better processes, structures, and performance between MSSP ACO provider networks and maintenance of attributed beneficiaries. There have been organizations that improved care processes and positively modified health care provider behavior, but context matters when noting driving change factors and overall performance. The adjusted logistic regression results indicated highly comprehensive ACO provider networks having a positive impact on the retention of attributed beneficiaries. Generalized linear models were used to test the hypotheses related to changes in provider operations (Leighton, 2019).

Transformation achievement in the U.S. health care system is extensive, time-consuming, daunting, and undoubtedly feels foreign to some stakeholders. However, as Medicare is currently the nation's largest purchaser of health care in the United States, and the MSSP is one of the broadest APMs, the federal payer, CMS, and related Center for Medicare and Medicaid Innovation, has been the impetus for driving change. Systemic, yet flexible; complex, yet straightforward – CMS has continued to forge ahead with implementing various types of MSSP ACOs to ensure effective, coordinated, fiscally responsible health care of sound quality for beneficiaries. ACOs are a vital component of the overall U.S. health care long-term strategy in moving toward value-based care. Medicare ACO design includes the provision of financial incentives to reduce health care delivery inefficiencies for a specific population (TXCIN, 2018). Success of value-based care and its ability to move the U.S. health care system toward higher quality and lower costs will depend on understanding the markers of ACO success thus far, a continuation of initiatives that have worked well, and a development of increased innovation geared towards improved quality and reduced costs (Moloney, 2015).

In ACOs, alignment between hospitals and physicians on patient care is driven by cost control and quality improvement endeavors. Clinical integration and interorganizational relationships are aimed at minimizing constraints, improving efficiencies, implementing strategies to address challenges related to limited resources, and coordinating patient care between inpatient, outpatient, and physician office services for appropriate care management as well as share centralized administrative services.

ACOs require meaningful collaboration as well as data sharing and integration (Harrison et al., 2018).

Under FFS models, providers can receive reimbursement for tests and procedures rendered with no reward nor penalty related to whether those services impacted patient quality of care outcomes or costs (LaPointe, 2017). Accountable, value-based care via APMs, however, creates a financial responsibility, or risk-based approach, for providers as it pertains to the health care services provided. Upside risk, or one-sided financial risk, allows provider participants to share in specific cost savings initiatives alongside the payer if the providers' rendered services make care delivery more efficient in higher quality and lowered costs (LaPointe, 2017). If costs exceed the agreed-upon benchmark, upside-only, or one-sided risk, provider participants do not qualify for any shared savings payments or financial incentives, but those providers are not penalized; they are held harmless from a cost perspective. Meaning, the upside-only, or one-sided risk provider can earn a financial reward if they meet the benchmark, but, good for the provider, have no chance of penalty if they do not meet the criterion. Upside-only, one-sided (payer) risk arrangements are typically preferred by providers as the providers have no risk of losing or paying back money to the payer; only an opportunity to be rewarded financially (LaPointe, 2017). Downside risk, or two-sided risk, promotes accountability on behalf of the provider in partnership with the payer. In this model, provider participants share in financial savings and losses. The provider is at shared, two-sided, inclusive of downside, the risk for saving and losing money in the shared-risk arrangement with the payer.

Shared risk models do not always equate to fifty percent division; sometimes payers take on more of the risk than the providers, for example. (LaPointe, 2017).

Kruthoff (2017) noted that the existence of downside risk, while currently still voluntary, is an indication that the U.S. federal government looks to shift further and scale more broadly to this kind of arrangement to transform the health care delivery system to become more aligned with health and wellbeing goals. Advocates of population health management may consider demonstrating the positive impact these changes can have on more robust and greater structures.

Integrated health care delivery networks have an opportunity under ACO program rules to function as population health networks (Falvey, 2017). These networks integrate clinical processes to improve outcomes for certain populations while reducing the related costs and enhancing the patient experience (Falvey, 2017). These assumptions are beneficial for launching ACOs, but future research may want to better understand panel size, patient demographics, and other influential outcome variables (Falvey, 2017).

Risk mitigation treatment (RMT) is a health care providers' ability to render additional activities to reduce morbidity (Franklin, 2017). These clinical interventions reducing specific patient risks can make incremental differences but may be subject to diminishing returns. An example of RMT is care coordination/management for high-risk demographic groups such as the chronically ill. Franklin used a simulation model design to test theoretical perspectives on prevention-oriented clinical services. The resulting finding was analyzed to show a positive correlation between changing payment systems and significant provider-induced demand changes (Franklin, 2017).

The declining functional ability of senior patients and the impact on accountable care costs and quality (Kornuszko-Story, 2018). Conducted via a budget impact analysis and interviews, potential cost savings and patient function were analyzed. The resulting indications were that specific facilities could save millions of dollars while the ACO could reduce discharges and readmissions for further cost savings all while creating a culture of mobility that would have a positive impact on quality (Kornuszko-Story, 2018).

ACOs and the MSSP

Of all health care payment and delivery systems reforms included in the ACA, ACOs may have the most significant potential to improve quality and reduce cost simultaneously. At their core, ACOs embody the pillars of value-based health care (Perez, 2015). The ACA created a health care industry catalyst with the idea of value over volume, with providers sharing in Medicare cost savings and focusing on population health. APMs and care delivery reforms in the United States have increased in popularity as it relates to their ability to lower health care costs. One of the key components of success in the program can be attributed to leveraging data for patient care tracking and service renderings outside of the typical settings. Understanding patient care patterns both in and out of the ACO network is essential to organizations reducing waste and limiting unnecessary services. Forward-thinking strategic relationships and innovative partnerships outside of the ACO, such as those with high-value post-acute facilities, should be considered to ensure quality performance and to control costs (LaPointe, 2017).

Table 2

Medicare ACO Strategy

		2012	2013	2014	2015	2016	2017	2018
PioneerACO Model	Designed for experienced organizations operating in ACO-like arrangements. Higher levels and multiple options of savings and risk than the MSSP. Possible transition to population-based payment in year 3.	*32	23	20	12	9	No longer active	No longer Active
Advance Payment ACO Model	Upfront advances and monthly payments for certain eligible physician-based and rural providers already in or interested in the MSSP		*35	35	35	No long active	No longer active	No longer active
ACO Investment Model (currently runs through 2018)	Upfront advances and monthly payments given on expected shared savings for MSSP ACOs to test pre-paid savings in rural and underserved areas.					*45	45	45
Medicare Shared Savings Program (ongoing)	Track 1 Earn up to 50% of shared savings. No risk of loss. Payment capped at 10% of benchmark		*217	399	340	412	438	460
	Track 1+ Earn up to 50% of shared savings. Risk							*55

	loss is 30% fixed. Payment capped at 10% of benchmark Track 2 Earn up to 60% of shared savings. Risk loss is 40%-60%. Payment capped at 20% of benchmark Track 3 Earn up to 75% of shared savings. Risk loss is 40%-75%. Payment capped at 20% of benchmark	#3	3	5	6 *16	6 45	8 58
Next Generation ACO Model (currently runs through 2020)	Earn 80%-100% of shard savings. Minimum Savings Rate not utilized. Optional All-Inclusive Population-Based Payments. Includes telehealth, 3-day skilled nursing facility, and post-discharge home visit waivers.				*13	37	37
Comprehensive ESRD Care Model (currently runs through 2020)	Multiple options of savings and risk. Designed for End-Stage Renal Disease beneficiaries receiving dialysis services. First ACO with disease specific focus.				*13	37	37

(TXCIN, 2018, para. 3)

Table 3

ACO Types and Descriptions

ACO Type	Description
Independent Physician Group	A single organization that directly provides outpatient care.
Physician Group Alliance	Multiple organizations that directly provide outpatient care.
Expanded Physician Group	Directly provides outpatient care and contracts for patient care.
Independent Hospital	A single organization that directly provides inpatient care.
Hospital Alliance	Multiple organizations with at least one that directly provides inpatient care.
Full-Spectrum Integrated	All services provided directly by the ACO. May include one or multiple organizations.

The CMS intentionally did not provide specific organizational requirements for MSSP ACOs. As such, current MSSP ACOs consist of academic medical centers, physicians, hospitals, independent practitioners, multi-specialty groups, Clinically Integrated provider Networks (CINs), Federally Qualified Health Centers (FQHCs), or a combination of the aforementioned. As such, the Medicare beneficiary population within the organizations have diverse demographic and health status patterns. It is not clear whether the success of MSSP ACOs is due to beneficiary characteristics or that of market or organizational distinctions. Ouayogode et al. (2017) posited that probable factors for a MSSP ACO's success include several elements such as beneficiary turnover and engagement, patient targeting, individual care management plans, evidence-based medicine, electronic health records, historical spending analysis, and geographic allocation. To that end, organizational and administrative infrastructure, care

management proficiencies, and clinical integration are arguably the most important ACO performance factors.

Accountable Care Initiatives

Powers et al. (2018) noted that ACOs work to control health care spending effectively; they are a leading player in delivery system reform and value-based payment models. As their growth will continue regardless of the political party in charge, there is reason to remain optimistic about the staying power of ACOs. With that, there are some important implementation lessons to recall when engaging practices in building Medicare-specific ACOs. Whether smaller in size or independent from hospital ownership, key factors of practice engagement in value-based care include a dedicated staff geared toward population health management expertise, practice transformation strategies, clinical productivity as well as actionable, insightful data sharing, analytics, and user experience.

The goal of ACOs is to improve the value of health care as soon as possible. However, it takes time to develop and maintain an infrastructure that is organized enough to plan, implement, and deploy; strong enough to maintain; and robust enough to scale outcomes-based care that will overhaul current care processes (Bleser et al., 2019).

Payers that take the proper time, resources, and thoughtful planning to launch effective value-based care programs can experience overall health care service improvements over FFS reimbursement. Strong partnerships, provider engagement and outreach, data sharing, cost management and quality measurement are all critical components of success in an APM. Properly implemented population health management

efforts, such as preventive care service offerings as well as quality and utilization management and review can yield better beneficiary healthcare patterns (Beaton, 2018).

Implementing appropriate strategic health care coordination efforts can improve transitions of care and allow for reductions in waste, curtail duplication of services, and galvanize interoperability efforts. Some examples of possible interventions across the health care continuum include appropriately shifting care from inpatient to lower-cost outpatient settings, proactive planning for hospital discharges, medication reconciliation, advancements in health information technology, managing integrated complex care teams and increasing engagement of beneficiaries and providers (Kaufman et al., 2017). However, conceptualization, development, implementation, integration, management, optimization, and transformation look different among various ACO types; stakeholders undertake performance enhancements differently. Clarification of universally accepted design and execution strategies could provide important insight into structural successes (Comfort, 2019).

Data analytics serve an important role in allowing for visualization and actionable insights of ACO initiatives, results, and potential next steps. Alsleben (2016) posited that efficiently using healthcare data can increase positive patient outcomes. Proper use of data analytics allows for more proactive population health management and related strategy implementation. The technology can engage the care team and provide real-time suggestions that could positively impact patients at the point of care. Additionally, data exchange standards and interoperability can be incorporated to further mature the

collaborative care in sharing and gaining access to information more efficiently and effectively and in real-time.

Current research notes that integrated networks (such as ACOs) have an assumptive positive relation on clinical outcomes. Falvey (2017) examined primary care providers in one integrated health care delivery network (IDN). Linear regression analyses were performed to analyze a specific subset of disease states; processes, and IDN outcomes. The study results concluded that proper use of evidence-based clinical guidelines, as often followed in IDNs, had a positive association with better clinical quality outcomes, noting the effectiveness of integration.

Integration with other provider types is an important component of ACO success. Social Determinants of Health (SDOH), Behavioral Health (BH), environmental sciences, cultural needs, long-term care, and other ancillary service offerings (such as access to dental, vision, hearing, and transportation needs) impact the managed population's overall health (McDonough, 2016). Collaborating with and incorporating the needs of other health care service offerings assists in addressing a deeper, broader range of patient care needs and better achieving health outcomes. A focus on the overall quality of care rendered versus the quantity of services provided is the basis of value-based care (McDonough, 2016).

Accountable care policies and procedures have administrative, programmatic, and practical implications. For example, initiatives such as End of Life (EoL) care are important to the overall success of ACOs. The level of aggressiveness of EoL care as well as hospice utilization patterns and levels impact an ACO's outcome measures (Kim,

2018). Similarly, Skilled Nursing Facility (SNF) use and related coordination is also an initiative that could increase overall quality outcomes and financial performance of the organization (Shipp, 2019). The development of preventive care models for the aging and chronically ill subpopulations are community and public health imperatives. Advanced and more mature preventive care models geared toward these subgroups are of growing importance due to the barriers this specific population faces. Designing, implementing, monitoring, researching, and improving models related to subpopulations are growing concerns (Coburn, 2016).

ACO success depends heavily on provider behavior modification. To assure needed changes, social purpose and professional mastery should be used as two motivators alongside the financial incentives that are accessible with APM participation. Positive patient impact, community service, and an opportunity to become a more effective health care provider by working in a team environment are a few of the factors that can help stimulate needed changes for provider-related components of U.S. health care delivery (Phipps-Taylor & Shortell, 2016).

Accountable Care Realizations

MSSP ACOs have shown strong performance related to quality-of-care measures and have comprehensively yielded cost savings year over year since program inception. The longer an ACO participates in the MSSP, the more likely the ACO is to be successful due to significant time and efforts needed on redesign initiatives (Bleser et al., 2018). Shetty's (2018) research argues that MSSP ACOs with four or more years of experience

in the program have a consistent association with reduced spending than peer ACOs with less experience.

Some crucial strategies in reducing Medicare spending and improving care quality include efforts such as increasing providers' awareness of costs, engaging beneficiaries (particularly those with complex care needs) in improving their own health, reducing avoidable hospitalizations, better managing SNF, home health, hospice and EoL initiatives, understanding BH and mental health needs, addressing SDOH, and utilizing technology to leverage information-sharing among the various participating health care providers (OIG, 2019).

The DHHS's Office of Inspector General (OIG) reported that most ACOs had instituted various strategies that have proven successful in lowering Medicare spending. Relatedly, the DHHS OIG suggested that CMS should conduct reviews to understand better the extent to which ACOs are improving quality and reducing spending. For example, care coordination is a critical component of most ACO's success in reducing emergency department (ED) visits and hospital readmissions but sharing this information more widely, so an increased number of stakeholders become aware, is critical to yield even more spending reductions and quality improvements amongst ACOs that may need assistance (King, 2019).

Another important pillar of ACO success is management involvement related to economies of scale. To increase the effective management of ACOs, care coordination is critical, but there must be adequate capital for Information Technology (IT) improvements to be used as a predictor of ACO performance (Lin, 2016). Proper IT

infrastructure as well as support for data mining, reporting, trending, analyses, and analytics are important factors for consideration.

From its launch in 2012 through 2018, the MSSP grew to 10.5 million beneficiaries: a quarter of traditional (or FFS) Medicare. Rooke-Ley et al. (2019) reviewed that traditional Medicare, revitalized via the MSSP, saves 1.51% per beneficiary. The Medicare Political Action Committee (MedPAC) agreed, in effect, with these findings when they concluded that the MSSP saved one to two percent by the year 2016. Some spillover can be accounted for, as well, adding another 0.57 percent to the overall savings the MSSP has over Medicare Advantage plans.

CMS data shows that 2017 MSSP ACOs saved the federal government hundreds of millions of U.S. dollars. This number reinforces the fact that ACOs can yield financial savings if given enough ramp-up time. Also, of importance, is the need to further strengthen the program for longevity and viability (Sweeney, 2018). From 2013-2016, MSSP ACOs saved CMS an estimated $2.66 billion (Dobson et al., 2018).

The Journal of the American Medical Association (JAMA) published a study that found upside only ACOs yielded a $287 million net savings in MSSP ACO performance year 2014. In like manner, the OIG reported in 2017 that ACOs lowered Medicare spending by $1 billion during the first three years of the MSSP. The National Association of ACOs (NAACOs) noted that time, resources, program predictability, experience, confidence, and some levels of success are all factors needed for ACOs to move toward two-sided ACO models. ACO-guru, current Aledade Chief Executive Officer (CEO) and former National Coordinator for Health Information Technology (HIT) in the Obama

Administration, Farzad Mostashari, M.D., said that the overarching goal of the MSSP should not be how many ACOs participate, but how successful those that *do* participate are in improving patient care. If providers are going to participate in ACOs, they must be doing something to add value to the system (Meltzer, 2018).

Shetty (2018) conducted a retrospective cohort study of MSSP ACOs from 2012-2016 using CMS Public Use File (PUF) data to review overall ACO spending, using a generalized estimating equation model. Resultantly, findings noted that ACOs who rendered less primary care services via specialists spent less per capita. The study showed that in order to reduce spending and perform optimally, ACOs should allow for no more than 35 to 40 percent of specialists to provide primary care services. The research yielded that MSSP ACOs with more than two years of experience in the program have lower cost implications than peer ACOs still in their first year. It is a suggested finding that participation for several consecutive years is essential for implementing and realizing the necessary clinical and administrative organizational structure to meet or exceed Medicare accountable care expectations. Further, MSSP ACOs with four or more years of consecutive participation show consistently lower expenditures, year over year.

Accountable Care Evolution

In late December 2018, CMS published a final rule for MSSP ACOs to further promote accountability and competition, changing the program's reference name to Pathways to Success. For the Medicare Trust Fund (MTF) to see the increased cost savings needed to ensure the longevity of Medicare entitlement for beneficiaries, there is an encouragement from the U.S. federal government for MSSP ACOs to transition to

enhanced risk more quickly, based upon performance. Starting in July 2019, MSSP ACOs will enter into one of the various tracks with CMS for at least a five-year contract term (Dealtry, 2019).

Before the evolutionary Pathways to Success update to the MSSP, the program included three tracks that allowed ACOs to gradually gain experience (sometimes up to six years with no downside risk to the ACO). No downside risk to the ACO meant that CMS took on any financial losses that the ACO yielded. While this created a glidepath for the ACO, it did not mandate the fiduciary responsibility of the ACO to share in the losses (Leventhal & Landi, 2018).

Pathways to Success is bold in its heightened steps toward quality health care, lower costs, increased competition, and beneficiary engagement. ACO program participation is encouraged, but advancement in the transition to value-based health care and market impact are critical components. As providers further themselves along the U.S. health care value continuum, expectations for positive outcome are rising (Frieden, 2018).

With the Pathways to Success update, Leventhal and Landi (2018) noted that CMS is steering away from upside-only models and taking the stand that ACOs should only have two (versus the aforementioned six) years to progress toward higher levels of shared financial risk-sharing with CMS. The change is partly because, as of 2019, only eighteen percent of MSSP ACOs were engaged in downside risk. Ultimately, and as the CMS administrator, Seema Verma, has made clear, upside only MSSP ACOs do not

generate enough financial savings and there is, essentially, no real incentive to improve outcomes and reduce overall health care costs.

As only about 10% of clinicians take on significant levels of financial risk today in the MSSP, adoption is one of the biggest challenges of advanced APMs. The transformative path towards value-based U.S. health care is not evolving as quickly as is needed. The limited, yet sometimes complex nature of APMs and the difficulty in obtaining actionable, insightful data are just two of the challenges that providers face in their committed pursuit of ensuring health care value. The Pathways to Success initiative saw thirty-eight of its applicants apply for advanced APM status risk levels (Leventhal, 2019). Providers interested in population health management relationships with accompanying financial risk may look to quantify the amount of risk they are willing to accept while implementing unnecessary service mitigation treatments. Meaning, providers should weigh the needs of services against the costs of taking on financial risk with a payer. This utility review may better show provider risk aversion behavior (Franklin, 2017).

CMS Administrator, Seema Verma, noted that Medicare (and the associated MTF) is no longer able to support programmatic initiatives with flaccid incentives that do not deliver the right outcomes. CMS looks to make a significant impact on the overall health care, specifically Medicare, market. To do so, CMS will continue to appropriately raise the bar as the MSSP matures to accelerate overall performance (Frieden, 2018).

As MSSP ACOs have expansion goals, there are various recommendations to ensure advancement of the APMs and effectiveness of accountable care renderings. One

such recommendation is related to better understanding the education and professional backgrounds of organizational leaders and essential leadership skills required for representing diverse population health management needs (Cornell, 2019). Another recommendation is that of considering the relationship between patient satisfaction, engagement, and financial performance (Pugh, 2016). Additionally, the best methods of ACO beneficiary assignment to remain competitive and economically equitable as well as more balanced risk levels and more attractive incentives are also considerations for future research (Racca, 2019).

Many positive outcomes of properly implemented ACOs exist while there are numerous open items related to understanding proper management. One would be remiss to not mention some of the ethical concerns that arise when ACOs are studied. Westling (2015) recalled the need for compatible reimbursement models; ensuring one uniform, proper standard of care; balancing patient choice with financial incentives, respectful disagreement on best practices, meeting ACO metrics versus evidence-based measures, as well as ensuring proper resources for preventive and reactive services as potential conflicts of ethical interest. ACO administrators and clinicians must keep these thoughts in mind when developing initiatives and planning for resources such as people, processes, and technology. Westling's research identified several major ethical issues that fell under biomedical principal domains such as justice, autonomy, beneficence, and non-maleficence. The research method Westling used was that of semi-structured, open-ended surveys. The overarching ethical issues included (a) under treatment due to financial reasons, (b) breaches of patient confidentiality, (c) lack of financial disclosures and (d)

overuse of practice guidelines. The findings were conflicting, but ultimately found that most providers will do what is in their patient's best interest. The only finding with a potential mitigation effect was that of shifting resources to be prevention focused.

Alibrahim (2017) wrote on the importance of continuous evaluation and review of initiatives as the U.S. health care market evolves around regulations, antitrust, privacy and other related matters. The market's ever-changing dynamics impact the powers, players, behaviors, and outcomes of ACOs. Provider capacity and service options are differentiating factors that can be leveraged to tip the competitive balance of ACOs. Case (2015) affirmed the need for health policy and delivery education programs for clinicians and administrators to improve their engagement levels and generate ideas for achieving efficient high-quality, lower cost U.S. health care.

Accountable Care Total Savings/Losses, Quality Score and Total Assigned Beneficiaries

Falk (2016) examined the 2014 performance data of Track 1 MSSP ACOs, using a quantitative analysis. The research findings included that ACOs further along in the contractual continuum of MSSP participation were more likely than younger, less mature ACOs to achieve savings; due partially to the learning curve, but also due to realized returns on initial investments in care coordination and preventative care initiatives. Falk (2016) noted there were numerous correlated data elements that showed statistical significance as it relates to overall success (generating savings) of the ACO, but there is however, still a need for additional research on future years' ACO data to note the

relationship that MSSP ACO participation can have on overarching costs and quality as it relates to the beneficiary (or managed population) pool.

Lin (2016) reviewed 2012, 2013, 2014 and 2015 MSSP ACO cohorts' performance. The methodology used was quantitative analysis of secondary data using multiple logistic and linear regressions. The study was a survey with 61 ACO executive/manager respondents yielding various responses about their respective ACO's performance and related perceptions of hospital involvement, degree of information technology adoption and usage as well as integration.

Noting the current lack of adequate research studies and information related to current MSSP ACO performance, specifically germane to beneficiaries, cost, and quality; there is a need for the review of the 2018 performance year MSSPACOs as it relates particularly to Generated Total Savings/Losses, Quality Score and Total Assigned Beneficiaries.

Definitions

Accountable Care Organization (ACO)*:* A legal entity formed by one or more ACO participants (Title 42 – Public Health, 2018).

ACO participant: An entity enrolled in Medicare that composes an ACO (Title 42 – Public Health, 2018).

Assignable beneficiary: A Medicare FFS beneficiary who, within a certain one-year period, sought primary health care services from a Medicare enrolled Doctor of Medicine (M.D.) or Doctor of Osteopathy (D.O.; Title 42 – Public Health, 2018).

Assignment: A CMS operational process of noting previous primary health care services from an ACO participant to appropriately designate a general beneficiary responsibility upon participant for a set performance year (Title 42 – Public Health, 2018).

Assignment window: The one-year period whereby beneficiaries are assigned to an ACO. Medicare FFS Beneficiary is a person who is enrolled in traditional Medicare (not a Medicare Advantage plan) for parts A and B (Title 42 – Public Health, 2018).

(Gross) *Generated losses:* Total losses (measured as Benchmark Minus Assigned Expenditures, from first to last dollar) ACOs in Track 2, Track 3, or the Track 1+ Model whose losses rate equaled or exceeded their MLR. This amount does not account for the application of the ACO's final sharing rate based on quality performance (for Track 2 or 3 ACOs) or the loss sharing limit (CMS, 2020).

(Gross) Generated savings: Total savings (measured as Benchmark Minus Expenditures, from first to last dollar) for ACOs whose savings rate equaled or exceeded their MSR. This amount does not account for the application of the ACO's final sharing rate based on quality performance, reduction due to sequestration, application of performance payment limit or repayment of advance payments (CMS, 2020).

Medical loss ratio (MLR): Money spent on premium dollars versus that spent on overhead activities. If an insurer uses eighty percent of premium dollars to pay claims and ensure quality improvement activities, the insurer is said to have a MLR of eighty percent if they spend the remaining twenty percent on overhead. The ACA set varying MLRs in different markets (healthcare.gov, 2020).

Minimum savings rate (MSR): A respective percentage of an ACO's historical benchmark, updated and calculated based on the population size of the assigned beneficiary pool (healthcare.gov, 2020).

Medicare Shared Savings Program (Shared Savings Program) One-Sided Model: One whereby the participating ACO shares the savings with the CMS program if certain requirements are met. This model does not create liability for the ACO to share in any financial losses (Title 42 – Public Health, 2018).

Medicare Shared Savings Program (Shared Savings Program) Two-Sided Model: one whereby the participating ACO shares in any potential savings and is also liable for sharing in any potential financial losses (Title 42 – Public Health, 2018).

Performance year and *reporting period:* Generally, the 12 months beginning on the first of January each year, unless otherwise noted (Title 42 – Public Health, 2018).

Quality measures: Assess the quality of care that an ACO renders, inclusive of clinical outcomes (Title 42 – Public Health, 2018).

Quality score: In Performance Year 1 of an ACO's first agreement period, the quality score is 100% if all measures were completely reported and less than 100% if one or more measures were not completely reported. Beyond Performance Year 1 of an ACO's first agreement period, the quality score will be determined not only by whether all measures were completely reported but also on their performance against established benchmarks and on quality improvement. For ACOs determined to have been affected by a natural disaster, the quality score is the higher of the ACO's calculated initial quality

score or the national mean quality score across all Shared Savings Program ACOs who met the quality performance standard (CMS, 2020).

Total assigned beneficiaries: The total number of beneficiaries assigned to an ACO in a particular performance year (CMS, 2020).

Assumptions

The aspects of this study believed to be true were that the participating ACOs understand what population health is, what their basic principles are, what the goals of the MSSP are and how to ensure objectives are met. Additionally, it is assumptive that each ACO knows the MSSP ACO performance rules, guidelines, and factors that impact advanced APMs. These assumptions are of critical importance as ACOs participate in the MSSP and are necessary in the context of the study due to the need to manage an entire population (at least five thousand attributed, assigned Medicare beneficiaries). Moreover, it is assumed that MSSP ACOs know their organization signed up to be accountable for the overall care of their patient population, must coordinate care with various health care teams, invest in infrastructure, and work toward redesigning health care to ensure highly efficient and quality service delivery (Physicians Advocacy Institute, 2020).

Scope and Delimitations

The scope of the study was inclusive of 2018 MSSP ACO results related to Generated Total Savings/Losses, Quality Score, and Total Assigned Beneficiaries. The specific aspects of the research problem addressed in the study were the costs, quality and total assigned beneficiaries of 2018 MSSP ACO participants. The specific focus chosen was because 2018 was the most recent publicly shared data file at the time this study was

initiated. As ACOs participate in the more recent years' MSSPs, and as years' worth of value-based health care progresses in the U.S., the understanding of population health should be relatively mature, the organizations should be evolved, and it is arguable that transformation should be able to be properly managed in terms of the people, processes, and technology required.

The boundaries of the study included MSSP ACO participants that have served various evaluation and management (E&M) services to at least 5,000 Medicare FFS beneficiaries and have a contract with CMS for at least three years. MSSP ACOs could include ACO professionals (physicians, physician assistants, or nurses) in group arrangements, networks of individual practices working together, partnerships or joint ventures, hospitals, FQHCs, and/or Rural Health Clinics (RHCs). The Medicare beneficiaries are attributed to the MSSP ACOs through a prospective methodology based on historical claims data, actual plural utilization during the performance year or preliminary assignment, or voluntary alignment (Physicians Advocacy Institute, 2020). This study did not include products or populations that are outside of MSSP ACO parameters such as commercial, Medicare Advantage (M.A.), Medicaid, CHIP, ACA Individual Exchange, and/or Veterans Affairs (V.A.) health plans and managed care organizations.

Theories related to this study, but were not fully investigated herein include, but are not limited to, the ACO Logic Model, Resource Dependency Theory, Structural Contingency Theory and Transaction Cost Economics (Palazzolo, 2015). The potential for generalizability was considered, but well understood that Medicare beneficiaries are

not all treated equitably in terms of accountable care service renderings and outcomes-based measurement amongst different providers, across various programs in disparate geographies.

The limitations of this work included data, analysis, and trending reports that are provided by the U.S. federal government and engaged, interested or participating organizations of MSSPs for the years of implementation, participation, and reporting. Therefore, the findings in terms of the relationship between Quality Score, Generated Total Savings/Losses and Total Assigned Beneficiaries cannot be representative of the entire U.S. health care system nor even all the Medicare-eligible population (as a large percentage of beneficiaries participate in a M.A. plan and some participate in none) and does not compare MSSP ACOs to non MSSPs ACO that may also be generating a higher value for the same variables of this study. While the Medicare FFS program showed that certain MSSP ACOs have generated savings for that specific sector of the population, it does not negate the fact that the entire system's cost could still be increasing, and quality could still be declining.

The challenges that arise when one attempts to review a relatively new program in a dynamic environment in an evolving, ever-changing system are that things do not remain static. It is difficult to ensure sound statistical analysis when there are frequent changes, year-over-year to the quality measures, or the cost-savings factors. Systematic and technical adjustments, as well as re-alignment, must be made by providers that may cause indifferent results. It is arduous to measure certain quality metrics when there are so many outlying issues that can affect the result. One must review data and reasoning

but understand there are retrospective changes that occur as well as arguments to a methodology that make sense in the space that must be considered.

The barriers one stands against when reviewing MSSP ACO quality measure data is the difficulty (or near impossibility) with extracting the effects that other Medicare changes and regulations have on the MSSP. For example, changes in Medicare rules regarding inpatient days, bundled payments for services such as total knee replacements, and other advents geared toward ensuring proper care across all provider types can and will very likely have a compounding, comprehensive effect on other initiatives being studied, such as MSSP ACOs. This is beyond the scope of this work but is a means for future study.

Significance, Summary, and Conclusions

This study contributed to a better understanding of the potential relationship between Generated Total Savings/Losses, Quality Score and Total Assigned Beneficiaries within 2018 MSSP ACOs. A scholarly review of the public use data file for 2018 validated Medicare Generated Total Savings/Losses and Quality Score advances as it relates to Total Assigned Beneficiaries (CMS, 2018). This is meaningful to the system in a multitude of ways. As previously reviewed in this study and as Falk (2016) noted, research performed on future years' MSSP ACO data (such as performance year 2018) is needed to relay the relationship amongst variables such as those studied in this work.

The bequest to the health services administration discipline, and the practice of health care in general, that this study will make is presenting to the reader the realities of statistically significant relationships among Quality Score, Generated Total

Savings/Losses and Total Assigned Beneficiaries in a specific MSSP ACO performance year. The relationship is important to understand in noting how organized, accountable health care, rendered in a quality-oriented, cost-aware state may qualitatively be considered a foremost option for overall medical and administrative cost savings concurrently boosting quality metrics, specifically in the Medicare space; replicable in other sectors of the system, but may or may not reflect same in a quantitative way. The research looks to support the professional practice of health care, in general, and demonstrate practical application by presenting select 2018 performance year data to review if MSSP ACOs should be considered an avenue of which can be utilized to reach the overarching U.S. health care system goals of achieving better care for individuals and better health for populations while lowering the growth in expenditures (National Association of ACOs, 2018).

MSSP ACOs that have shown success in meeting quality indicator benchmarks and cost savings have a series of strategies that they have followed, including, but not limited to care management, transitions of care administration, varying use of health IT, and improved processes (Mostashari & Broome, 2016). It is significantly relevant that the MSSP arrangement launched under the ACA to reduce spending and improve quality of care, among other objectives, is working. ACOs have resulted in favorable Medicare cost and quality performance (Livingston, 2017). The remaining question for enveloping U.S. health care lies in just how deep, broad, and far-reaching the effects of MSSP ACOs can be to the systemic structure. Interested parties look to better understand how the organizations will lead to positive social change for health care stakeholders of all kinds:

patients, providers, public payers, private constituents, policymakers, researchers, and the like. If MSSP ACOs can continue to decrease health care costs while concurrently increasing quality for managed populations, there is a compelling argument for their staying power in the U.S. health care system. If able to maintain momentum and prove transformative, MSSP ACOs could forever change the health care landscape.

Section 1 provided the problem statement, purpose of the study, research questions and related hypotheses, theoretical foundation, nature of the study, literature review, definitions assumptions, scope, delimitations, and significance. Section 2 will review the research design and rationale, analysis methodologies, threats to validity and ethical procedures. Section 2 will review the research design and rationale, methodology, threats to validity, as well as ethical procedures.

Section 2: Research Design and Data Collection

The purpose of this quantitative study was to note the statistically significant relationship between Quality Score, Generated Total Savings/Losses, and Total Assigned Beneficiaries for MSSP ACO participants in the 2018 performance year. The literature review yielded findings that MSSP ACOs are a viable option for health administrators to reach systemic goals due to their effect on cost and quality; they can not only save the federal government billions of dollars as the years progress and initiatives become more innovative and collaborative, but also ensure care quality is enhanced (National Association of ACOs, 2018). The need for my study lay in noting whether MSSP ACOs can improve quality and costs savings to allow further expansion of ACOs by health administrators by reviewing the relationship between 2018 MSSP ACOs' Quality Score, Generated Total Savings/Losses and Total Assigned Beneficiaries.

The major sections of this chapter include Research Design and Rationale, Methodology (population, sampling, and instrumentation/operationalization), and Threats to Validity (including Ethical Procedures).

Research Design and Rationale

The study's variables were Generated Total Savings/Losses, Quality Score and Total Assigned Beneficiaries. For Research Question 1, the independent (X, horizontal line) score, predictor variable was Quality Score and the dependent (Y, vertical line) score variable was Generated Total Savings/Losses. The independent and dependent variables were both scale variables; therefore, the analysis performed was a simple linear regression. For Research Question 2, the independent (X) variable was Total Assigned

Beneficiaries, and the dependent (Y) variable was Quality Score. The independent and dependent variables were both scale variables; therefore, the analysis performed was also a simple linear regression.

The research design was nonexperimental using secondary data quantitative analysis. Nonexperimental design does not manipulate the variables studied; it is used in research when there are specific research questions or hypotheses about correlations amongst variables (Mehl et al., 2007). Nonexperimental design was applied to this study because I used a PUF, whereby the variables were studied, not manipulated in any way, and I hypothesized what the relationships were among the independent and dependent variables. The methodology of inquiry was a systematic review and strategic analysis of said publicly available secondary data for MSSP ACO participants in the 2018 performance year. The connection of the research design to the research questions aligns as the secondary data allowed me to note the relationship between Quality Score to Generated Total Savings/Losses and Quality Score to Total Assigned Beneficiaries.

The time constraint of this study was that the only ACO performance year to be studied was 2018. Only the 2018 MSSP ACO performance year was studied because it was the most current MSSP ACO PUF data shared at the time of doctoral study initiation and allowed me to review Quality Score, Generated Total Savings/Losses, and Total Assigned Beneficiaries data for the most recent year of MSSP ACO participation, at the time.

Resource constraints consisted of the fact that the research only reviewed CMS MSSP ACO PUF data available via the internet on CMS's website. Other sources of data

that could have been used in this study, but were not, include Medicare Hospital Compare Data, Agency for Healthcare Research and Quality (AHRQ) information, National Committee for Quality Assurance (NCQA) quality indicators, and other CMS as well as private payer ACO data.

Additional factors that this study could have included, but did not, were whether MSSP ACOs were a part of other pay-for-performance, value-based, outcomes-based quality improvement, APM and/or cost savings initiatives with other payers for commercial, M.A. Medicaid, Children's Health Insurance Program (CHIP), Exchange, V.A., or other lines of business.

This study did not take into account whether the reviewed 2018 MSSP ACO participants engaged in any other CMS healthcare transformation efforts under accountable care (e.g., the Comprehensive End-Stage Renal Disease Care Model, the Medicare Health Care Quality Demonstration and the Vermont All-Payer ACO Model), episode-based payment initiatives (e.g., Bundled Payments for Care Improvement Initiative, Comprehensive Care for Joint Replacement Model and Oncology Care Model), nor primary care transformation (e.g., Comprehensive Primary Care Plus, Independence at Home Demonstration and Primary Care First Model).

Also not accounted for in this study was whether 2018 MSSP ACO participants were a part of other CMS initiatives focused on the Medicaid and CHIP population (e.g., Medicaid Innovation Accelerator Program, Financial Alignment Initiative for Medicare-Medicaid Enrollees, and Initiative to Reduce Avoidable Hospitalizations Among Nursing Facility Residents).

Initiatives to accelerate the development and testing of new payment and service delivery models (such as Accountable Health Communities Model, Artificial Intelligence Health Outcomes Challenge, CMS Innovation Center New Direction, Emergency Triage, Treat and Transport Model, Home Health Value-Based Purchasing Model, Maryland All-Payer Model, Maryland Total Cost of Care Model, MA, Value-Base Insurance Design Model, Medicare Care Choices Model, Pennsylvania Rural Health Model, Regional Budget Payment Concept, Rural Community Hospital Demonstration, State Innovation Models Initiative and Value in Opioid Use Disorder Treatment Demonstration Program) were also not noted in this study.

Initiatives to speed the adoption of best practices (such as the Health Care Payment Learning and Action Network, Hispanic Health Services Research Grant Program, Historically Black Colleges and Universities Research Grant Program, Medicare Diabetes Prevention Program Expanded Model, Million Hearts and Partnership for Patients) were not specifically reviewed in this study to note whether MSSP ACO participants partook in those efforts or not.

The design choice of nonexperimental secondary data analysis, whereby CMS 2018 MSSO ACP PUF data were reviewed to understand the relationship between Generated Total Savings/Losses, Quality Score and Total Assigned Beneficiaries for the participants in the 2018 performance year, was consistent with the need to advance knowledge of MSSP ACO overall performance in the most mature year since inception of the program to compare various metrics for correlations.

Generated Total Savings/Losses were the total savings or losses that the participating MSSP ACOs renders for their patient population; ultimately–whether the ACO spent less money than benchmarked in the performance year, or more. Quality score was originally measured as 100% if all measures were completely reported and less than 100% if one or more measures were not completely reported. Afterward, quality will be determined by whether measures were completely reported and the performance against established benchmarks and improvement efforts. Total Assigned Beneficiaries were the total number of Medicare beneficiaries that each ACO had attributed to the group.

I used the CMS's MSSP ACO 2018 Public Use Files as the source of data. At the time of writing, the information could be found on CMS' website.

Methodology

Population

The population included in this study were the 2018 MSSP ACO provider participants and their related managed beneficiary pool. As of the first day in January of the 2018 performance year, there were 561 ACOs (the most out of all performance years, 2012 to current) in all fifty states plus Washington, DC, and Puerto Rico. The 10.5 million assigned Medicare beneficiaries in the year 2018 was the second highest of all MSSP ACO performance years, 2012 to current. $983 million was the total earned shared savings (the most out of all performance years, 2012 to current). There was a reported 93% average overall quality score (second highest to 2016's and 2012/2013's 95%). In the 2018 performance year, there were 171 physician-only ACOs (30%, 324 physicians,

hospitals and other facilities ACOs (58%), and 66 FQHCs/RHCs ACOs (12%). The 2018 Medicare beneficiary demographic distribution was as follows:

- ESRD – 81,397 (0.79%)
- Disabled – 1,294,555 (12.64%)
- Aged Dual – 688, 076 (6.72%)
- Aged Non-Dual – 8,180, 954 (79.85%; CMS, 2019)

Sampling and Sampling Procedures Used

The population included the comprehensive MSSP ACO 2018 performance data set. The sample for sensitivity analysis was determined by a G*Power Analysis. The procedure used to collect the secondary quantitative data consisted of visiting the CMS's MSSP ACO PUF government website (https://www.cms.gov/Research-Statistics-Data-and-Systems/Downloadable-Public-Use-Files/SSPACO), clicking on the 2018 Shared Savings Program ACO interactive data set and opening the associated next page. Then, I exported the standard analytical data file into an Excel workbook. Once the Excel workbook was open, I filtered columns to only see column B (ACO_Name), column S (N_AB), column W (GenSaveLoss) and column AB (QualScore) to make the data set easier to analyze for the linear regressions that were performed. The dataset showed a total of 548 participating ACOs with associated variables. As noted earlier in this study, N_AB is the variable name for Total Assigned Beneficiaries, GenSaveLoss is the variable name for Generated Total Savings/Losses and QualScore is the variable name for Quality Score.

As noted in this work, RQ1 asked, Is there a statistically significant relationship between the Quality Score and Generated Total Savings/Losses for 2018 Medicare Shared Savings Program Accountable Care Organization participants? The null hypothesis for RQ1 stated there is no statistically significant relationship between the Quality Score and Generated Total Savings/Losses for 2018 Medicare Shared Savings Program Accountable Care Organization participants. The alternative hypothesis for RQ1 stated there is a statistically significant relationship between the Quality Score and Generated Total Savings/Losses for 2018 Medicare Shared Savings Program Accountable Care Organization participants. RQ2 asked, Is there a statistically significant relationship between the Quality Score and Total Assigned Beneficiaries for 2018 Medicare Shared Savings Program Accountable Care Organization participants? The null hypothesis for RQ2 stated there is no statistically significant relationship between the Quality Score and Total Assigned Beneficiaries for 2018 Medicare Shared Savings Program Accountable Care Organization participants. The alternative hypothesis for RQ2 stated there is a statistically significant relationship between the Quality Score and Total Assigned Beneficiaries for 2018 Medicare Shared Savings Program Accountable Care Organization participants. RQ1's independent variable is Quality Score. RQ1's dependent variable is Generated Total Savings/Losses. RQ2's independent variable is Total Assigned Beneficiaries. RQ2's dependent variable is Quality Score.

I ran a preliminary sensitivity analysis via G*Power (Version 3.1.9.6 for Mac OS X 10.7 to 10.15; 2 MB) software. This preliminary sensitivity analysis was run to better understand certain elements and the minimum sample size needed for the comprehensive

data analysis. The protocol of power analyses via G*Power included an *F* test, using the statistical test of linear multiple regression: fixed model, R^2 deviation from zero. The type of power analysis was a priori, used to compute required sample size – given alpha, power and effect size. The input parameters determined a 0.15 effect size f^2, 0.05 alpha err prob, 0.8 power (1-beta err prob), and the total number of predictors as 1. The output parameters determined an 8.2500000 noncentrality parameter, 4.0230170 critical *F*, 1 numerator *df*, 53 denominator *df*, 55 total (minimum) sample size and 0.8050826 actual power.

Instrumentation and Operationalization of Constructs

This study used a published instrument developed by the CMS, with associated data published in 2019 and made publicly available on the CMS' government website. The study reviewed the MSSP ACO 2018 performance year. This instrumentation was appropriate to the study because it was used to note the relationship between the variables chosen for review. Permission was not required from the developer (the CMS) because it was a U.S. government-supplied data file created for public consumption and use. However, an emailed permission letter (see Appendix) was exchanged between the CMS and scholar practitioner that confirms permission and use for this doctoral study. The reliability of the published instrument was high because it yielded the same results regardless of the researcher using the federally shared PUF data set. The validity of the published instrument has been argued by various interested parties due to the fact the data set cannot predict counterfactual scenarios. Specifically, it is hard to know what would have been spent on CMS covered benefits for the population served if ACOs did not exist

(LaPointe, 2017). This instrument was previously used in performance years 2012, 2013, 2014, 2016, and 2017 with the same Medicare population, but with slightly different measures and modes of interpretation. The instrument is planned to be used in future performance years, as well.

Operationalization

All variables in this study had numerical values. The operational definition of Total Assigned Beneficiaries, Quality Score and Generated Total Savings/Losses was noted earlier in this work. In summary, N_AB was the variable name for Total Assigned Beneficiaries, GenSaveLoss was the variable name for Generated Total Savings/Losses and QualScore was the variable name for Quality Score. The description of Total Assigned Beneficiaries is the total number of assigned beneficiaries in the performance year. The description of Generated Total Savings/Losses is total savings for ACOs whose savings rate equaled or exceeded their MSR or total losses for ACOs whose loss rate equaled or exceeded their MLR. The description of Quality Score varies depending on performance year and agreement period. In the initial performance year of an ACO's first agreement period, the Quality Score is automatically 100% if all measures were completely reported and less than 100% if one or more measures were not completely reported. After the initial performance year of an ACO's first agreement period, the Quality Score will be determined by whether all measures were completely reported as well as the ACO's performance against established benchmarks and on quality improvement. There is assistance in quality scoring for ACOs affected by natural disasters. (CMS, 2020).

As previously stated earlier in this study:

- The IV for RQ1 was Quality Score
- The DV for RQ1 was General Total Savings/Losses
- The IV for RQ2 was Total Assigned Beneficiaries
- The DV for RQ2 was Quality Score

CMS uses prospective and retrospective beneficiary assignment for Tracks 1 and 2. CMS uses prospective beneficiary assignment only for Tracks 1+ and 3. If a beneficiary receives at least one service from a primary care provider within that ACO, the beneficiary is assigned via a two-step process. Additionally, in the 2018 performance year, beneficiaries could self-designate via voluntary alignment through MyMedicare.gov (CMS, 2020). The operational definitions of the variables were described in the Purpose of the Study section of this work.

Data Analysis Plan

Software used for initial analysis of the data was G*Power. G*Power is a statistical software used to calculate data analyses and related powers. Additional software used was that of IBM's Statistical Package for the Social Sciences (SPSS). IBM SPSS is a statistical package utilized for interactive analyses. The researcher performed an initial G*Power analysis to determine the minimum needed sample size and address the elements to be reviewed in the data set. Data cleaning and screening procedures were reviewed by a quantitative methodologist, as appropriate. As noted previously in this work, the first research question noted if there is a statistically significant relationship between the Quality Score and Generated Total Savings/Losses for 2018 Medicare

Shared Savings Program Accountable Care Organization participants and the second research question noted if there is a statistically significant relationship between the Quality Score and Total Assigned Beneficiaries for 2018 Medicare Shared Savings Program Accountable Care Organization participants.

The analysis plan was inclusive of statistical tests, procedures, rationale, and interpreted results. The statistical tests that were used to test the hypotheses included simple linear regression of scale variables and ANOVA Analysis. The procedures used to account for two different statistical analyses were appropriate because of the two research questions and their differing independent and dependent variables. There were no covariates nor confounding variables. Results were reported (key parameter estimates, confidence intervals or probability values, odds ratios, etc.) by using the SPSS software tool.

Threats to Validity

The threats to external validity could have been potential interaction effects and reactiveness of arrangements. For example, if MSSP ACO participants engaged in multiple value-based care efforts, each requiring different initiatives to be worked on with various benchmarks and scoring mechanisms, there could have been confusion as to when and where to allocate particular practice protocols; how to properly manage the practice from an administrative and clinical perspective and when/if to treat certain members differently based on their associated payer. In contrast, a MSSP ACO participant could have been managing value-based care efforts for an attributed, assigned population and providing FFS health care needs. At the same time, though, if all patients

were treated with equitable health care consistencies in mind, providers might have reacted differently when rendering care to a FFS patient versus that of an outcomes-based one. This phenomenon of FFS volume versus value-based care provision could have negative or positive implications on the overall total patient population that the MSSP ACO provider participant oversaw. It is important to recognize the external threats in this study because although MSSP ACO participation was studied as a move in the right direction toward value-based health care in the U.S., there remains the above-stated extraneous factors that convolute that notion.

The study's threats to internal validity may have included program participation maturity, experimental mortality, and selection interaction. For example, if a MSSP ACO participant was aware of their participation requirements, understood the quality indicators and shared savings (cost) guidelines, but for whatever reason were not aligning with the organizational evolution, transformation, and reengineering required to meet value-based care needs, there may have existed a discord with the intent of the program. The more time that a provider remains participating in a MSSP ACO, the more mature the opportunity for advancement along the continuum. However, if practice administration and clinical refinement were not occurring and sophistication was lacking, therein could lie a problem with the move towards value-based health care. There could also have been an issue with providers not owning enough of the risk in their performance-based contractual agreement; meaning, there was not enough provider support as the practitioner did not have financial consequences as it relates to cost and quality indicators (Mostashari, 2018).

Ethical Procedures

This study used CMS MSSP ACO PUF data. Public use files are allowed by the CMS to be used where and when appropriate, by any public interested party. The researcher, however, did submit an electronic mail communication whereby permission was granted from the CMS for the researcher to use PUF data, noting that the public can utilize it for various purposes (inclusive of doctoral studies such as this). There will be no human participant (in this case, for example, Medicare beneficiaries nor MSSP ACO participating providers) specific detail provided in the PUF. There were no institutional permissions that needed to be granted to use the CMS' MSSP ACO PUF data, thus none were obtained.

Ethical concerns as it relates to recruitment materials and processes were not applicable at the person/member level for this study. From a business perspective, the MSSP ACO participating provider groups agreed in their CMS contract to publish their entity and performance information as it relates to the scores and benchmarks for their MSSP ACO participation in the applicable performance year (CMS, 2019). As the MSSP ACO participants had a contract in place, at the time, with CMS to relay the guidelines for participation in the program, there were no ethical concerns in this study related to data collection regarding MSSP ACO participants refusing to participate or requesting early withdrawal.

The study data were taken from a federal government source, published for utilization by interested parties as a "Public Use File" posted on the CMS website. Although the data are public, permission to gain access to the secondary data set and

subsequent use in doctoral research was obtained from CMS. See Appendix A: Permission to Use CMS MSSP ACO PUF data. The public data used for this study were found and remains archived on the CMS website where the PUF data sets are housed. The data did not contain any sensitive or non-public information at the time of use. The CMS are the stewards of the data that was used in this secondary data analysis doctoral study.

In terms of ethical implications, this study had no understood entanglements. The researcher used a public use file for the data analysis and received permission to use from the source. Secondly, the matter of privacy or confidentiality was overruled when it came to participating provider groups because each participant was fully aware of and agreed to allow their performance to be publicly available at the time. Insofar as Medicare beneficiary-specific detail, that remained privy to the data collection mechanism that CMS used to collect MSSP ACO details; not available via the PUF utilized for this study.

Summary

The research design of this study was non-experimental using secondary data quantitative analysis of a CMS public use data file. The methodology of inquiry consisted of a systematic review and strategic analysis of said publicly available secondary data for MSSP ACO participants in the 2018 performance year. The study noted that the 2018 MSSP ACO performance year had the most participants, the most total earned shared savings and the second highest average overall Quality Score of all years, to date (Centers for Medicare & Medicaid Services, 2019).

Sullivan and Feore (2018) noted a recent analysis finding that the more experience MSSP ACOs have, the more likely they are to generate savings. The longer individual ACOs participate in the MSSP, the broader the shift away from FFS models become. Year-over-year participation in a MSSP ACO allows for more experience with population health management, creation, and implementation of data infrastructure(s), and changing behavior to render positive financial results and quality indicators.

Section 2 provided the research design and rationale, analysis methodologies, threats to validity and ethical procedures. Section 3 will review the collection of secondary data.

Section 3: Presentation of the Results and Findings

The purpose of this quantitative study, and a differentiator from others published, was to note the statistically significant relationship between quality and costs as well as the statistically significant relationship between quality and the assigned beneficiaries for MSSP ACO participants in the 2018 performance year. The literature review revealed that MSSP ACOs are a viable option for health administrators to reach systemic goals due to their effect on cost and quality; they can not only save the federal government, revenue via taxpayers, billions of dollars as years progress and initiatives become more innovative and collaborative, but also ensure care quality is enhanced (National Association of ACOs, 2018). This study was needed to determine whether MSSP ACOs can improve quality and costs savings as it relates to assigned beneficiaries to allow further expansion of ACOs by health administrators.

The research questions and hypotheses, as presented previously in this study, are noted below:

RQ1: Is there a statistically significant relationship between the Quality Score and Generated Total Savings/Losses for 2018 Medicare Shared Savings Program Accountable Care Organization participants?

$H_0$1: There is no statistically significant relationship between the Quality Score and Generated Total Savings/Losses for 2018 Medicare Shared Savings Program Accountable Care Organization participants.

$H_1$1: There is a statistically significant relationship between the Quality Score and Generated Total Savings/Losses for 2018 Medicare Shared Savings Program Accountable Care Organization participants.

RQ2: Is there a statistically significant relationship between the Quality Score and Total Assigned Beneficiaries for 2018 Medicare Shared Savings Program Accountable Care Organization participants?

$H_0$2: There is no statistically significant relationship between the Quality Score and Total Assigned Beneficiaries for 2018 Medicare Shared Savings Program Accountable Care Organization participants.

$H_1$2: There is a statistically significant relationship between the Quality Score and Total Assigned Beneficiaries for 2018 Medicare Shared Savings Program Accountable Care Organization participants.

RQ1's independent variable is Quality Score. RQ1's dependent variable is Generated Total Savings/Losses. RQ2's independent variable is Total Assigned Beneficiaries. RQ2's dependent variable is Quality Score.

Generated total savings are the gross total savings for ACOs whose savings rates were equal to or less than their MSR. Generated total losses are the gross total losses for Track 2 and 3 ACOs whose savings rates were less than or equal to their MLR. ACO Tracks (inclusive of 2, starting in 2012 and 3, starting in 2016) vary in financial structures, beneficiaries, data and quality reporting requirements, compliance, and waivers. Quality Score was 100% in the ACO's first agreement period if all measures were completely reported and less than 100% if one or more measures were not

completely reported. Medicare requires ACOs to report the quality measures, which are composed of 33 nationally recognized measurements in four categories (i.e., patient experience, care coordination/patient safety, and preventative health) and five different at-risk populations. Afterward, the Quality Score is determined by whether measures were completed reported or not and on the ACO's performance against certain quality improvement initiatives and established benchmarks (CMS, 2018).

This section reviews the data collection process using a secondary data set, data analysis results, and the summary of findings.

Data Collection of Secondary Data Set

I used the CMS's 2018 Medicare Shared Savings Program Accountable Care Organizations Public Use File data (and associated dictionary) as the data source for this study. The files were found on the CMS site (https://www.cms.gov/Research-Statistics-Data-and-Systems/Downloadable-Public-Use-Files/SSPACO/index.html). The data document was titled "2018_Shared_Savings_Program_SSP_Accountable_Care_Organizations_ACO_PUF." The dictionary document was titled "Dictionary.ACO.SSP.PUF.2018" (CMS, 2018).

The time frame for data collection was inclusive of the 2018 performance year. I did not have to complete any recruitment efforts nor be concerned with response rates as the secondary data set was managed by the CMS' 2018 MSSP ACO participants. There were no discrepancies in using the secondary data set from the plan presented in Section 2 of this work.

The baseline descriptive and demographic characteristics of the sample included Generated Total Savings/Losses (noted as GenSaveLoss in the dataset), Quality Score (noted as QualScore in the dataset) and Total Assigned Beneficiaries (noted as N_AB in the dataset). The sample represented the population of interest having included 548 participating MSSP ACOs in the 2018 MSSP ACO performance year.

The statistical assessment used to test the hypotheses for both RQs was simple linear regression of scale variables. The procedures used to account for two different statistical analyses were appropriate because of the two research questions and their differing independent and dependent variables. There was no basic univariate analysis, covariates, nor confounding variables. Once SPSS was opened, I used the analyze option to review descriptive statistics then frequencies to create tables in the software, presented herein.

The Results

Descriptive statistics and related data visualizations were reviewed for the three variables included in RQ1 and RQ2 with a total population of 548. The Mean (average) of Quality Score was 0.929064. The mean of Total Assigned Beneficiaries was 18,424.95. The mean of Generated Total Savings/Losses ($) was 2,850,592.38. These statistics of the average participating 2018 MSSP ACO note a Quality Score of nearly 1, Total Assigned Beneficiaries of just over 18,000 and Generated Total Savings of almost $3 million. The findings show the analyst and interested parties that the 2018 MSSP ACO participating providers were, on average, mostly high quality with shared savings, managing nearly 20,000 beneficiaries. The relevance lies in the fact that one could note

overarchingly that 2018 MSSP ACO participating providers rendered high quality care in a cost-effective manner for many beneficiaries.

The median for Quality Score was 0.937650. The median for Total Assigned Beneficiaries was 11,688.50. The median for Generated Total Savings/Losses was 0.00. The findings show the analyst and interested parties that middle-of-the-road 2018 MSSP ACO participating providers were mostly high quality with no shared savings, managing nearly 12,000 beneficiaries. The relevance lies in the fact that one could note overarchingly that between the highest and the lowest, the middle-performing 2018 MSSP ACO participating providers rendered high quality care for thousands of beneficiaries, but not with cost savings.

The mode for Quality Score was 1.0000. The mode for Total Assigned Beneficiaries was 5,230. The Mode for Generated Total Savings/Losses was 0. These statistics note that most participating 2018 MSSP ACOs had a Quality Score of 1, managed a Total Assigned Beneficiary pool of just over 5,000 and did not have any Generated Total Savings or Losses.

The standard deviation of Quality Score was 0.0688419. The standard deviation of Total Assigned Beneficiaries was 18,572.682. The standard deviation of Generated Total Savings/Losses ($) was 9,676,813.542. Standard deviation shows how dispersed the data is related to the mean (average). The lower the standard deviation, data is more clustered around the mean. The higher the standard deviation, data is more spread out. A Quality Score standard deviation at nearly 0.07 has data close to the mean. A Total Assigned Beneficiaries standard deviation over 18,000 means data is not close to the

mean. A Generated Total Savings/Losses standard deviation of almost 10 million means data is not at all close to the mean. Therefore, most ACOs have similar Quality Score, but Total Assigned Beneficiaries and Generated Total Savings/Losses are scattered.

The skewness of Quality Score was -2.037. The skewness of Total Assigned Beneficiaries was 3.079. The skewness of Generated Total Savings/Losses was 3.666. Skewness measures the variable deviation of normal distribution from probability distribution. Skewness can be used to describe the degree of asymmetry. In this study, the variables with a positive skew greater than zero were Total Assigned Beneficiaries and Generated Total Savings/Losses; the mean is greater than the medium.

The standard error of skewness for Quality Score was 0.104. The standard error of skewness for Total Assigned Beneficiaries was 0.104. The standard error of skewness for Generated Total Savings/Losses was 0.104. Standard error of skewness can be used to test normality. In this study, normality can be accepted because the findings are between -2 and +2; meaning, the descriptive statistics are within reason.

The kurtosis of Quality Score was 9.083. The kurtosis of Total Assigned Beneficiaries was 12.068. The kurtosis of Generated Total Savings/Losses was 34.690. Kurtosis measures the extent of outliers and can be used to describe a distribution. Higher kurtosis indicates less likelihood of deviations. Normal distributions have a kurtosis value of zero. Positive kurtosis indicates more outliers. Negative kurtosis indicates less outliers. The findings of this study note there are some outliers, but seemingly not too extreme.

Data sets with higher kurtosis oftentimes have outliers whereas data sets with lower Kurtosis tend to lack outliers. In this study, the Quality Score and Total Assigned

Beneficiaries variables were lower than the Generated Total Savings/Losses variable; meaning, the two former mentioned variables had less outlier likelihood.

The standard error of kurtosis for Quality Score was 0.208. The standard error of kurtosis for Total Assigned Beneficiaries was 0.208. The standard error of kurtosis for Generated Total Savings/Losses was 0.208. Standard error of kurtosis can be used to test normality. In this study, normality can be accepted because the findings are between -2 and +2; meaning, the descriptive statistics are within reason.

The minimum for Quality Score was 0.4545. The minimum for Total Assigned Beneficiaries was 605. The minimum for Generated Total Savings/Losses was -45,126,888 (losses of estimated $45 million). These statistics note that the minimum Quality Score for participating 2018 MSSP ACOs was less than 0.46, the least number of Total Assigned Beneficiaries managed was 605 and the least Generated Total Savings was negative; the most Generated Total Losses was $45 million.

The maximum for Quality Score was 1.0. The maximum for Total Assigned Beneficiaries was 137,516. The maximum for Generated Total Savings/Losses ($) was 112,523,299. These statistics note that the maximum Quality Score for participating 2018 MSSP ACOs was 1, the highest number of Total Assigned Beneficiaries managed was 137,516 and the most Generated Total Savings was nearly $13 million.

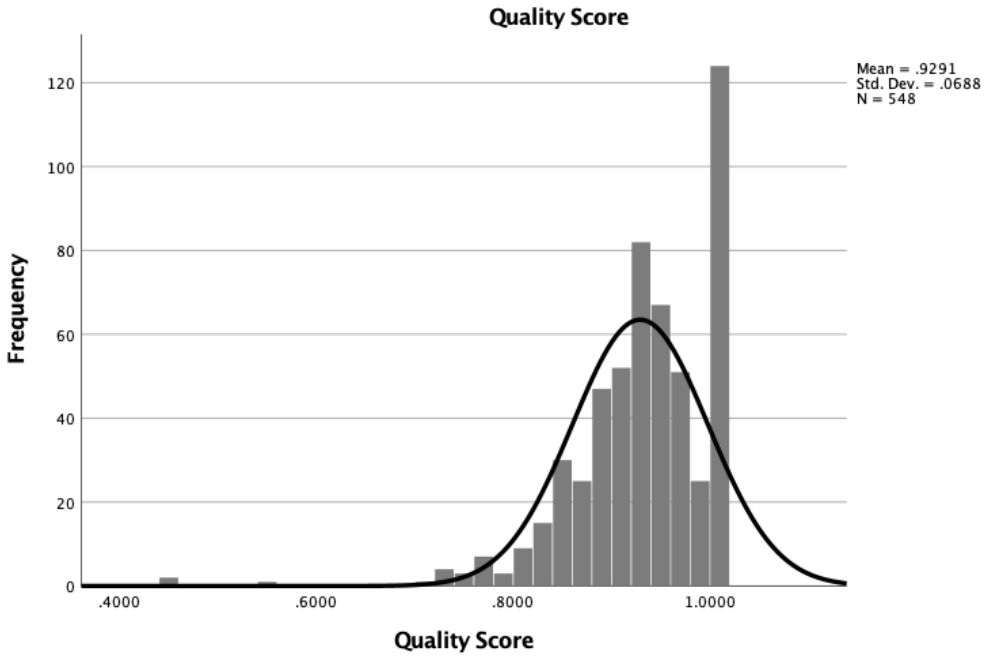
Table 4

Variable Statistics

		Quality Score	Total Assigned Beneficiaries	Generated Total Savings/Losses
N	Valid	548	548	548
	Missing	0	0	0
Mean		.929064	18424.95	2850592.38
Median		.937650	11688.50	.00
Mode		1.0000	5230[a]	0
Std. Deviation		.0688419	18572.682	9676813.542
Skewness		-2.037	3.079	3.666
Std. Error of Skewness		.104	.104	.104
Kurtosis		9.083	12.068	34.690
Std. Error of Kurtosis		.208	.208	.208
Minimum		.4545	605	-45126888
Maximum		1.0000	137516	112523299

Figure 1

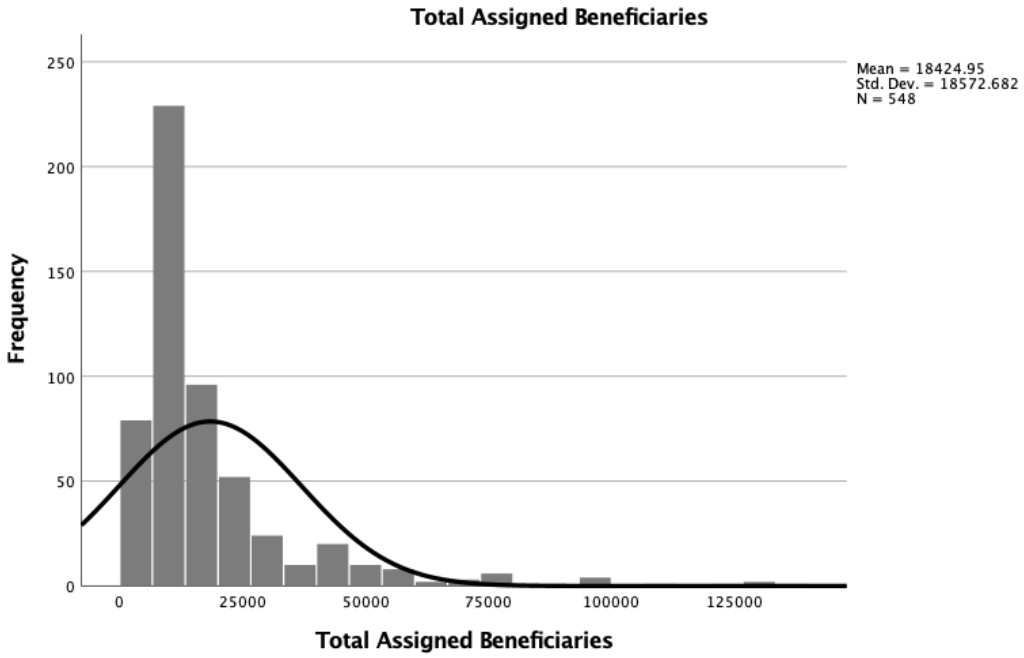
Quality Score Statistics



This chart shows the mean Quality Score as 0.9291. Most of the participating MSSP ACOs in the 2018 performance year had a Quality Score of 1. The minimum score was 0.4545. The maximum score was 1.

Figure 2

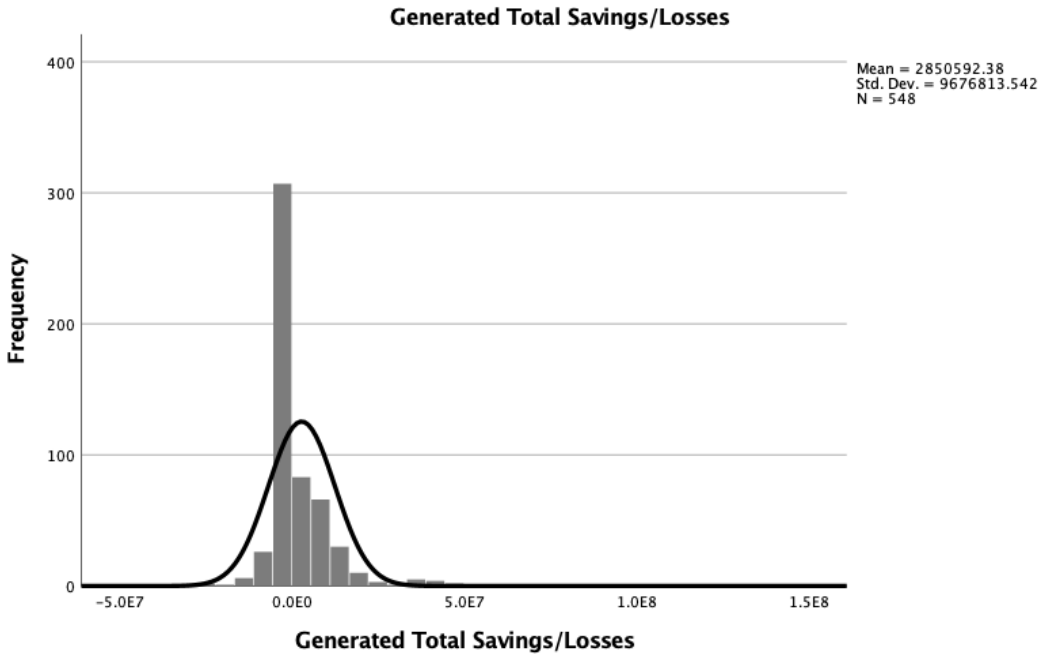
Total Assigned Beneficiaries Statistics



This chart shows the mean Total Assigned Beneficiaries at 18,435. Most of the participating MSSP ACOs in the 2018 performance year managed 5,230 Total Assigned Beneficiaries. The minimum number of beneficiaries was 605 and the maximum was 137,516.

Figure 3

Generated Total Savings/Losses Statistics



This chart shows the mean Generated Total Savings/Losses at $2,850,592. Most of the participating MSSP ACOs in the 2018 performance year saved CMS $0. The minimum savings was -$45,126,888; these were losses. The maximum savings was $112,523,299.

After descriptive statistics were reviewed for the two variables included in RQ1 and the two variables included in RQ2, the researcher/analyst used SPSS to run a simple linear regression analysis (SPSS: Analyze → Regression → Linear) for the research questions with the accompanying statistics options chosen in SPSS: Estimates, Confidence Intervals at 95%, Model Fit, R Squared change, and Descriptive Statistics.

Additionally, the plots option was chosen in SPSS to include histogram and normal probability plot.

RQ1: Is there a statistically significant relationship between the Quality Score and Generated Total Savings/Losses for 2018 Medicare Shared Savings Program Accountable Care Organization participants?

$H_0$1: There is no statistically significant relationship between the Quality Score and Generated Total Savings/Losses for 2018 Medicare Shared Savings Program Accountable Care Organization participants.

$H_1$1: There is a statistically significant relationship between the Quality Score and Generated Total Savings/Losses for 2018 Medicare Shared Savings Program Accountable Care Organization participants.

After analyzing the dataset, the null hypothesis was accepted and shown to be the true hypothesis. The analysis yielded results showing no statistically significant relationship between Quality Score and Generated Total Savings/Losses for 2018 Medicare Shared Savings Program Accountable Care Organization provider participants. The data depicted a very low likelihood that their Quality Score impacted Generated Total Savings (or) Losses in 2018 MSSP ACOs. Meaning, if Quality Score changed (up or down), Generated Total Savings/Losses did not vary tremendously. In summary, Quality Score was not a predictor of Generated Total Savings/Losses in the 2018 performance year.

The variables for RQ1 were Quality Score and General Total Savings/Losses; both scale variables. Quality Score was the independent predictor (constant) variable

shown on the horizontal X-axis. General Total Savings/Losses was the dependent variable displayed on the vertical Y-axis. Dependent and independent variables were updated for SPSS analysis, as described herein.

The variable statistics ran show that the mean Quality Score was 0.93 and the mean of Generated Total Savings/Losses was $2,850,592. The average participating MSSP ACO in the 2018 performance year had a Quality Score of 0.93 and saved CMS $2,850,592. The dataset used a sample size of 548 MSSP ACO participants.

The Pearson correlation results for Quality Score and Generated Total Savings/Losses were 1.000 and -0.036. This depicts an estimated 3.5% correlation between Generated Total Savings/Losses being dependent on Quality Score. The data shows that there is a very low likelihood that Generated Total Savings or Losses in 2018 MSSP ACOs were impacted by their Quality Score.

The significance (one-tailed) for Quality Score and Generated Total Savings/Losses was 0.199. The difference between the observations is not statistically significant because it is more than 0.05. Therefore, the null hypothesis is accepted. The results for RQ1 (is there a statistically significant relationship between the Quality Score and Generated Total Savings/Losses for 2018 Medicare Shared Savings Program Accountable Care Organization participants?) were that there was not a statistically significant relationship between Quality Score and Generated Total Savings/Losses for 2018 Medicare Shared Savings Program Accountable Care Organization participants. The null hypothesis (there is no statistically significant relationship between the Quality Score and Generated Total Savings/Losses for 2018 Medicare Shared Savings Program

Accountable Care Organization participants) was accepted. The alternative hypothesis (there is a statistically significant relationship between the Quality Score and Generated Total Savings/Losses for 2018 Medicare Shared Savings Program Accountable Care Organization participants) was rejected.

The model summaries included R of 0.036, R square of 0.001, adjusted R square of -0.001 (nearly 100% of the model is not explained), standard error of the estimate at 9,679,330.245, R square change of 0.001, F change at 0.716, df1 at 1 and df2 at 546 with change statistics of significant F change at 0.398. The 0.001 R square at 1/10 (1%) explains the variation as very low. If the Quality Score changes (up or down), Generated Total Savings/Losses does not vary tremendously; thus, the statistical significance is low. In summary, the dataset shows that Quality Score is not a predictor of Generated Total Savings/Losses.

ANOVA analysis showed regression sum of square as 67,043,058,040,096.000. Regression sum of square depicts how well a regression model represents the data being modeled. One as high as this means the regression model does not fit the data well. ANOVA analysis showed residual sum of square as 51,154,430,963,240,432.000 with a total of 51,221,474,021,280,528.000. Residual sum of square measures modeling error variation. One as high as this means the regression model poorly explains the data. The regression mean square was 67,043,058,040,096.000; meaning this regression is not statistically significant. The residual mean square was 93,689,433,998,608.840; meaning the residual is not statistically significant. The F was 0.716 and the significance was

0.398. This is the indicator of probability that the null hypothesis is true. Significance in the SPSS output is the label for the p-value.

When reviewing unstandardized coefficients in the regression analysis, the constant beta (B), the intercept of the model, was 7,575,313.704 and the Quality Score B was -5,085,463.502. Unstandardized beta (B) represents the line slope between the predictor and dependent variables. The constant standard error was 5,600,559.631 and the Quality Score standard error was 6,011,722.724. When reviewing unstandardized coefficients, there was no constant beta. The Quality Score beta was -0.036. The constant *t* was 1.353 and the Quality Score *t* was -0.846. The constant significance was 0.177. The Quality Score significance was 0.398. At a 95.0% confidence interval for B, the constant lower bound was -3,425,967.996, the constant upper bound was 18,576,595.405, the Quality Score lower bound was -16,894,400.386 and the Quality Score upper bound was 6,723,473.382. There is not a statistical significance. These statistics show the strength of the effect of the independent to the dependent variable. In summary, Quality Score does not have a strong impact on other variables.

Statistical assumptions were evaluated as appropriate to this study. The residual statistics, difference between observed and mean value, show a predicted value minimum of 2,489,850.25, a residual minimum of -48,233,604.000, a standard predicted value minimum of -1.030 and a standard residual minimum of -4.983 as well as a predicted value maximum of 5,263,970.50, a residual maximum of 109,567,624.000, a standard predicted value maximum of 6.894 and a standard residual maximum of 11.320. The predicted value mean was 2,850,592.38. The residual mean was 0.000. The standard

predicted value mean was 0.000. The standard residual mean was 0.000. The predicted value standard deviation was 350,092.853. The residual standard deviation was 9,670,478.547. The standard predicted value standard deviation was 1.000. The standard residual standard deviation was 0.999. The *N* (population) was 548 for predicted value, residual, standard predicted value, and standard residual. The predictions and residuals note no statistical significance. These findings indicate the extent of the model's account of observed data variation. Ultimately, the predictions varied from the observations.

The data analysis indicates that Quality Score is not a statistically significant predictor of Generated Total Savings/Losses in the 2018 performance year; meaning, regardless of a 2018 participating MSSP ACO's Quality Score, there is not a significant impact on their Generated Total Savings or Losses. The statistical analysis findings of the unstandardized B are not statistically significant. For every increase in Quality Score, Generated Total Savings/Losses decreased by $5.6 million. The confidence interval includes the value of 0; this is not a statistically significant result. The Quality Score significance is 0.398. In statistical analysis, if the p-value is less than 0.05, it is statistically significant. As 0.398 is greater than 0.05, the p-value is not statistically significant. The data relays that there is no statistically significant argument that there is a relationship between Quality Score and Generated Total Savings/Losses; there is no correlation between the two variables.

Review of the data visualizations for RQ1 via Histogram, Normal P-P Plot of Regression Standardized Residual and Scatterplot were appropriate and characterized the sample. This study did not require post-hoc analyses or related reported results. There

was no need to report any additional statistical tests of hypotheses that emerged from the analysis of main hypotheses for the study. All pertinent tables and figures to illustrate results were included herein.

Regression

Table 5

Variable Statistics

	Mean	Std. Deviation	N
Generated Total Savings/Losses	2850592.38	9676813.542	548
Quality Score	.929064	.0688419	548

Table 6

Correlations

		Generated Total Savings/Losses	Quality Score
Pearson Correlation	Generated Total Savings/Losses	1.000	-.036
	Quality Score	-.036	1.000
Sig. (1-tailed)	Generated Total Savings/Losses	.	.199
	Quality Score	.199	.
N	Generated Total Savings/Losses	548	548

Table 7

Variables Entered/Removed

Model	Variables Entered	Variables Removed	Method
1	Quality Score[b]	.	Enter

a. Dependent Variable: Generated Total Savings/Losses

b. All requested variables entered.

Table 8

Model Summary

					Change Statistics			
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	F Change	df1	df2
1	.036[a]	.001	-.001	9679330.245	.001	.716	1	546

Model	Change Statistics Sig. F Change
1	.398

a. Predictors: (Constant), Quality Score

b. Dependent Variable: Generated Total Savings/Losses

Table 9

ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	67043058040096.000	1	67043058040096.000	.716	.398[b]
	Residual	51154430963240432.000	546	93689433998608.840		
	Total	51221474021280528.000	547			

a. Dependent Variable: Generated Total Savings/Losses

b. Predictors: (Constant), Quality Score

Table 10

Coefficients

		Unstandardized Coefficients		Standardized Coefficients			95.0% Confidence Interval for B	
Coefficients								
Model		B	Std. Error	Beta	t	Sig.	Lower Bound	Upper Bound
1	(Constant)	7575313.704	5600559.631		1.353	.177	-3425967.996	18576595.405
	Quality Score	-5085463.502	6011722.724	-.036	-.846	.398	-16894400.386	6723473.382

a. Dependent Variable: Generated Total Savings/Losses

Table 11

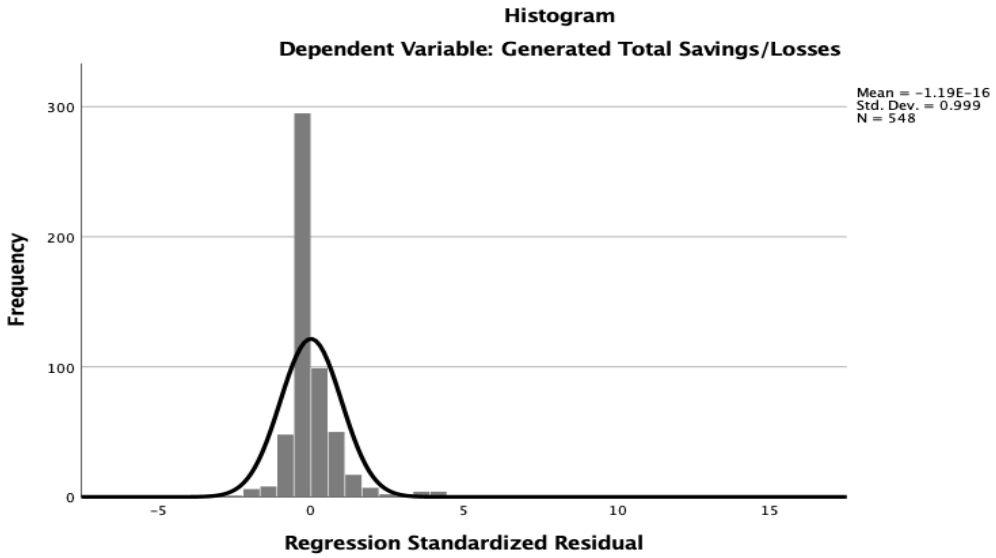
Residuals Statistics

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	2489850.25	5263970.50	2850592.38	350092.853	548
Residual	-48233604.000	109567624.000	.000	9670478.547	548
Std. Predicted Value	-1.030	6.894	.000	1.000	548
Std. Residual	-4.983	11.320	.000	.999	548

a. Dependent Variable: Generated Total Savings/Losses

Figure 4

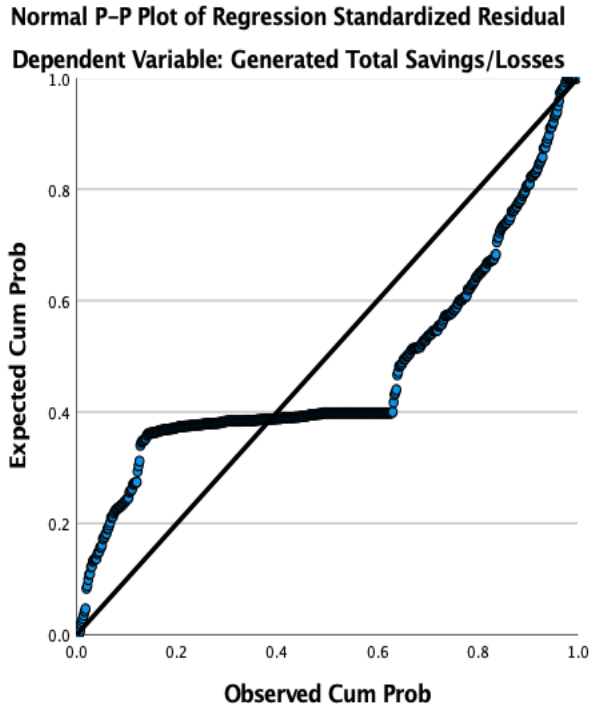
Histogram – DV: Generated Total Savings/Losses



The DV Generated Total Savings/Losses Histogram depicts the frequency and regression standardized residual of 2018 performance year MSSP ACOs: whether they saved or lost millions of U.S. dollars. The x-axis shows the losses or savings. The y-axis shows the number of 2018 performance year MSSP ACOs. This chart shows how often Generated Total Savings/Losses occurs. Visually, 0 was the most frequent occurrence. Meaning, most of the 2018 MSSP ACOs had $0 in Generated Total Savings/Losses.

Figure 5

Normal P-Plot – DV: Generated Total Savings/Losses

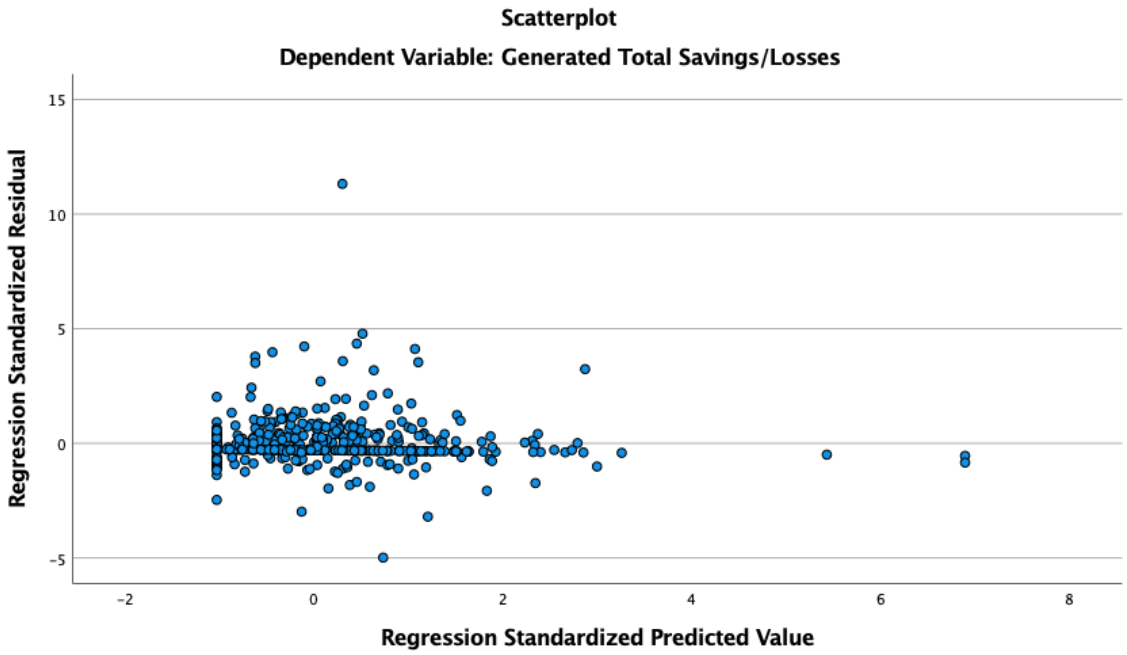


The DV Generated Total Savings/Losses Normal P-Plot of Regression Standardized Residual depicts probability of 2018 performance year MSSP ACOs. The x-axis shows the observed cumulative probability. The y-axis shows the expected

cumulative probability. This chart shows the observation of Generated Total Savings/Losses occurrence and the expectation of Generated Total Savings/Losses occurrence was not aligned.

Figure 6

Scatterplot – DV: Generated Total Savings/Losses



The DV Generated Total Savings/Losses Scatterplot depicts predicted and residual standardized regression. The x-axis shows regression standardized predicted value. The y-axis shows the regression standardized residual of 2018 performance year MSSP ACOs. This chart shows that most participating MSSP ACOs in the 2018 performance year had around $0 of Generated Total Savings/Losses. There were outliers, but not enough to totally skew the clear visualization that most 2018 MSSP ACOs are scattered around the $0 savings mark.

After reviewing RQ1, the researcher/analyst used SPSS to run a simple linear regression analysis (SPSS: Analyze → Regression → Linear) for RQ2 with the same accompanying Statistics options chosen in SPSS for the RQ1 analysis: Estimates, Confidence Intervals at 95%, Model Fit, R Squared change, and Descriptives. Additionally, the Plots option was chosen in SPSS to include histogram and normal probability plot.

RQ2: Is there a statistically significant relationship between the Quality Score and Total Assigned Beneficiaries for 2018 Medicare Shared Savings Program Accountable Care Organization participants?

$H_0$2: There is no statistically significant relationship between the Quality Score and Total Assigned Beneficiaries for 2018 Medicare Shared Savings Program Accountable Care Organization participants.

$H_1$2: There is a statistically significant relationship between the Quality Score and Total Assigned Beneficiaries for 2018 Medicare Shared Savings Program Accountable Care Organization participants.

After analyzing the dataset, the null hypothesis was accepted and showed to be the true hypothesis. The analysis yielded results showing no statistically significant relationship between Quality Score and Total Assigned Beneficiaries for 2018 Medicare Shared Savings Program Accountable Care Organization provider participants. The data depicted a very low likelihood that Quality Score in 2018 MSSP ACOs was impacted by Total Assigned Beneficiaries. Meaning, if Total Assigned Beneficiaries changed (up or

down), Quality Score did not vary tremendously. In summary, Total Assigned Beneficiaries was not a predictor of Quality Score

The variables for RQ2 were Quality Score and Total Assigned Beneficiaries, both scale variables. As such, Quality Score was the dependent variable shown on the vertical Y-axis and Total Assigned Beneficiaries was the independent predictor (constant) variable displayed on the horizontal X-axis. Dependent and independent variables were updated for SPSS analysis, as described herein.

The variable statistics ran show that the mean Quality Score was 0.93 and the mean of Total Assigned Beneficiaries was 18,425. The average participating MSSP ACO in the 2018 performance year had a Quality Score of .93 and managed 18,425 members.

The Pearson correlation results for Quality Score and Total Assigned Beneficiaries were 1.000 and 0.007. This depicts an estimated 0.7% correlation between Quality Score and Total Assigned Beneficiaries. The data showed that there is a very low likelihood that Quality Score in 2018 MSSP ACOs was impacted by Total Assigned Beneficiaries.

The significance (one-tailed) for Quality Score and Total Assigned Beneficiaries was 0.432. The difference between the observations is not statistically significant and the null hypothesis is accepted. The results for RQ2 (is there a statistically significant relationship between the Quality Score and Total Assigned Beneficiaries for 2018 Medicare Shared Savings Program Accountable Care Organization participants?) were that there was not a statistically significant relationship between Quality Score and Total Assigned Beneficiaries for 2018 Medicare Shared Savings Program Accountable Care

Organization participants. The null hypothesis (there is no statistically significant relationship between the Quality Score and Total Assigned Beneficiaries for 2018 Medicare Shared Savings Program Accountable Care Organization participants) was accepted. The alternative hypothesis (there is a statistically significant relationship between the Quality Score and Total Assigned Beneficiaries for 2018 Medicare Shared Savings Program Accountable Care Organization participants) was rejected.

The model summaries included R of 0.007, R square of 0.000, adjusted R square of -0.002, standard error of the estimate at 0.0689031, R square change of 0.000, F change at 0.029, df1 at 1 and df2 at 546 with change statistics of significant F change at 0.865. The 0.000 R square at 0/0 (0%) explains the variation is nothing. Meaning, if Total Assigned Beneficiaries changes (up or down), Quality Score does not vary at all; thus, there is no statistical significance. In summary, the dataset shows Total Assigned Beneficiaries is not a predictor of Quality Score.

ANOVA analysis showed the regression sum of squares as 0.000. Regression sum of square depicts how well a regression model represents the data being modeled. A low sum of squares means the regression model fits the data well. ANOVA analysis showed residual sum of squares as 2.592 with a total of 2.592. Residual sum of square measures modeling error variation. The regression mean square was 0.000; meaning, the model is perfect. The residual mean square was 0.005. The regression F was 0.029 and the regression significance was 0.865. This is the indicator of probability that the null hypothesis is true. Significance in the SPSS output is the label for the p-value.

When reviewing unstandardized coefficients in the regression analysis, the constant B was 0.929 and the Total Assigned Beneficiaries B was 2.698E-8, while the constant standard error was 0.004 and the Total Assigned Beneficiaries standard error was 0.000. When reviewing standardized coefficients, there was no constant beta. The Total Assigned Beneficiaries beta was 0.007. The constant t was 223.862 and the Total Assigned Beneficiaries t was 0.170. The constant significance was 0.000. The Total Assigned Beneficiaries significance was 0.865. At a 95% confidence interval for B, the constant lower bound was 0.920. The constant upper bound was 0.937. The Total Assigned Beneficiaries lower bound was 0.000 and the Total Assigned Beneficiaries upper bound was 0.000. Meaning, there is not a statistical significance. These statistics show the strength of the effect of the independent to the dependent variable. In summary, Total Assigned Beneficiaries does not have a strong impact on other variables.

Statistical assumptions were evaluated as appropriate to this study. The residual statistics showed a predicted value minimum of 0.928583, a residual minimum of -0.4750648, a standard predicted value minimum of -0.959 and a standard residual minimum of -6.895 as well as a predicted value maximum of 0.932278, a residual maximum of 0.0713072, a standard predicted value maximum of 6.412 and a standard residual maximum of 1.035. The predicted value mean was 0.929064. The residual mean was 0.0000000. The standard predicted value mean was 0.000. The standard residual mean was 0.000. The predicted value standard deviation was 0.0005012. The residual standard deviation was 0.0688401. The standard predicted value standard deviation was 1.000. The standard residual standard deviation was 0.999. The population was 548 for

predicted value, residual, standard predicted value, and standard residual. The predictions and residuals note no statistical significance.

The dataset shows that Total Assigned Beneficiaries is not a predictor of Quality Score. The statistical analysis findings of the unstandardized B are not statistically significant because for every increase in Total Assigned Beneficiaries, Quality Score decreased by 0.004 (0.4%). The confidence interval includes the value of 0; this is not a statistically significant result. The Total Assigned Beneficiaries significance is 0.865. In statistical analysis, if the p-value is less than 0.05, it is statistically significant. As 0.865 is greater than the p-value, it is not statistically significant. The data relays that there is no statistically significant argument that there is a relationship between Total Assigned Beneficiaries and Quality Score; there is no association between the two variables.

Review of the data visualizations for RQ 2 via histogram, normal p-plot of regression standardized residual and scatterplot were appropriate and characterized the sample. There was not a need in this study for post-hoc analyses of statistical tests. Thus, there were no reported results of such. Additionally, there was no need to report any further statistical tests of hypotheses that emerged from the main hypotheses. All pertinent tables and figures to illustrate results were included herein.

Regression

Table 12

Variable Statistics

	Mean	Std. Deviation	N
Quality Score	.929064	.0688419	548
Total Assigned Beneficiaries	18424.95	18572.682	548

Table 13

Correlations

		Quality Score	Total Assigned Beneficiaries
Pearson Correlation	Quality Score	1.000	.007
	Total Assigned Beneficiaries	.007	1.000
Sig. (1-tailed)	Quality Score	.	.432
	Total Assigned Beneficiaries	.432	.
N	Quality Score	548	548
	Total Assigned Beneficiaries	548	548

Table 14

Variables Entered/Removed

Model	Variables Entered	Variables Removed	Method
1	Total Assigned Beneficiaries[b]	.	Enter

a. Dependent Variable: Quality Score

b. All requested variables entered.

Table 15

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics			
					R Square Change	F Change	df1	df2
1	.007[a]	.000	-.002	.0689031	.000	.029	1	546

Model	Change Statistics
	Sig. F Change
1	.865

a. Predictors: (Constant), Total Assigned Beneficiaries

b. Dependent Variable: Quality Score

Table 16

ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.000	1	.000	.029	.865[b]
	Residual	2.592	546	.005		
	Total	2.592	547			

a. Dependent Variable: Quality Score

b. Predictors: (Constant), Total Assigned Beneficiaries

Table 17

Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients			95.0% Confidence Interval for B
		B	Std. Error	Beta	t	Sig.	Lower Bound
1	(Constant)	.929	.004		223.862	.000	.920
	Total Assigned Beneficiaries	2.698E-8	.000	.007	.170	.865	.000

Model		95.0% Confidence Interval for B
		Upper Bound
1	(Constant)	.937
	Total Assigned Beneficiaries	.000

Table 18

Residuals Statistics

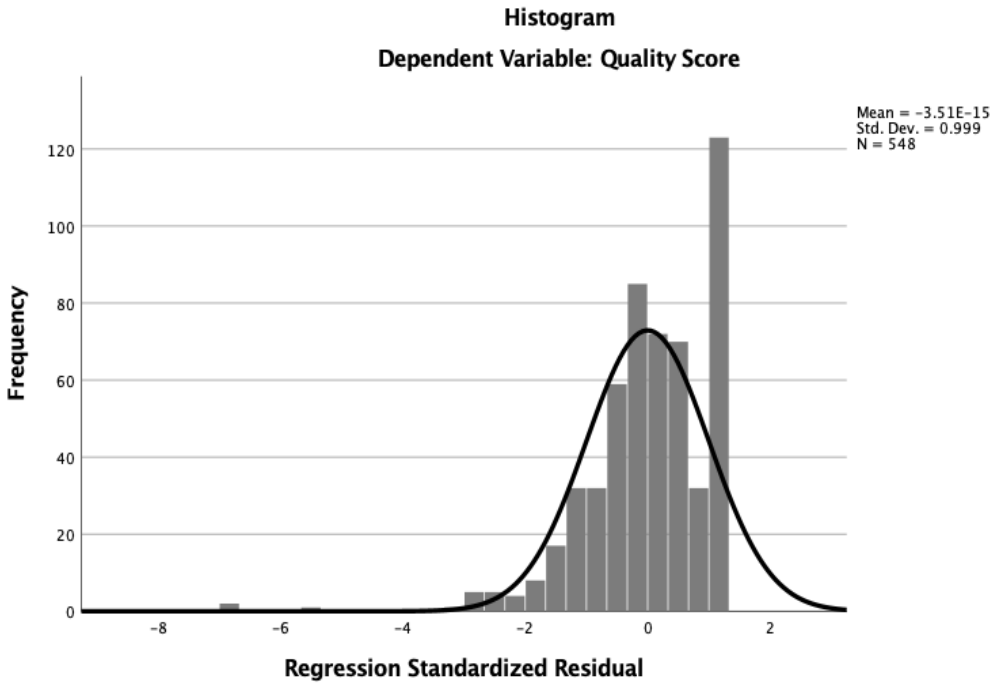
	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	.928583	.932278	.929064	.0005012	548
Residual	-.4750648	.0713072	.0000000	.0688401	548
Std. Predicted Value	-.959	6.412	.000	1.000	548
Std. Residual	-6.895	1.035	.000	.999	548

a. Dependent Variable: Quality Score

Charts

Figure 7

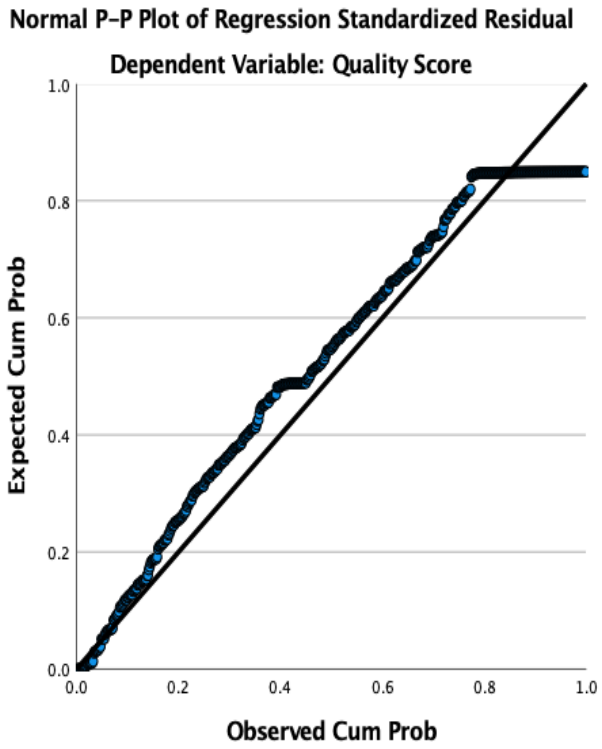
Histogram – DV: Quality Score



The DV Quality Score histogram depicts the frequency of regression standardized residual. The x-axis shows the regression standardized residual. The y-axis shows frequency of 2018 performance year MSSP ACOs. This chart shows how often (how many participating MSSP ACOs in the 2018 performance year) had a certain Quality Score. Visually, a score of 1 (between 0 and 2) was the most frequent occurrence. Meaning, most of the 2018 MSSP ACOs had a Quality Score of 1.

Figure 8

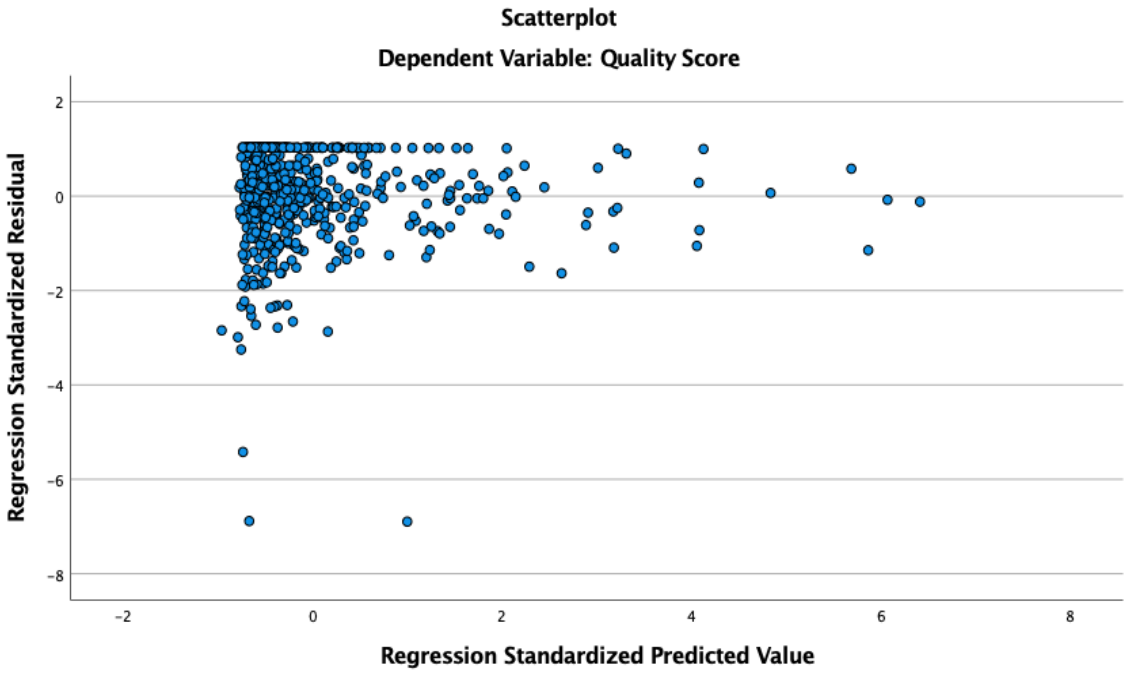
Normal P-Plot – DV: Quality Score



The DV Quality Score normal p-plot of regression standardized residual depicts probability of 2018 performance year MSSP ACOs. The x-axis shows the observed cumulative probability. The y-axis shows the expected cumulative probability. This chart shows the expectations of probability of Quality Score occurrence and the expected probability of Quality Score occurrence was close from 0 through 0.8 then the observed probability tapered off.

Figure 9

Scatterplot – DV: Quality Score



The DV Quality Score scatterplot depicts predicted and residual standardized regression. The x-axis shows regression standardized predicted value. The y-axis shows the regression standardized residual of 2018 performance year MSSP ACOs. This chart shows that most participating MSSP ACOs in the 2018 performance year had a Quality Score of 1. There were outliers, but not enough to totally skew the clear visualization that most Quality Scores are scattered around 1.

Summary

After the secondary dataset was quantitatively analyzed, I was able to review the study's two research questions, understand the statistically significant relationships between Quality Score and Generated Total Savings/Losses as well as Quality Score as

Total Assigned Beneficiaries for MSSP ACO participants in the 2018 performance year and note if each of the null and alternative hypotheses were respectively accepted or rejected.

The results for RQ1 (is there a statistically significant relationship between the Quality Score and Generated Total Savings/Losses for 2018 Medicare Shared Savings Program Accountable Care Organization participants?) were that there was not a statistically significant relationship between Quality Score and Generated Total Savings/Losses for 2018 Medicare Shared Savings Program Accountable Care Organization participants. The null hypothesis (there is no statistically significant relationship between the Quality Score and Generated Total Savings/Losses for 2018 Medicare Shared Savings Program Accountable Care Organization participants) was accepted. The alternative hypothesis (there is a statistically significant relationship between the Quality Score and Generated Total Savings/Losses for 2018 Medicare Shared Savings Program Accountable Care Organization participants) was rejected.

The findings for RQ1 were that there was no statistically significant relationship between Quality Score and Generated Total Savings/Losses for 2018 Medicare Shared Savings Program Accountable Care Organization provider participants. The data showed a very low likelihood that their Quality Score impacted Generated Total Savings (or) Losses in 2018 MSSP ACOs. Meaning, if Quality Score changed (up or down), Generated Total Savings/Losses did not vary tremendously; thus, the statistical significance was low. The data showed no statistically significant argument that there is a relationship between Quality Score and Generated Total Savings/Losses; there is no

correlation between the two variables. In summary, the dataset shows that Quality Score was not a predictor of Generated Total Savings/Losses.

Any potential notion that 2018 MSSP ACO participants' Generated Total Savings/Losses in 2018 MSSP ACOs could be impacted by Quality Score is refuted by these findings. This study's findings are important to MSSP ACO policy creation and program management. MSSP ACOs stakeholders (proponents and opponents alike) would likely want to review findings that show a lack of statistical significance between Quality Score and Generated Total Savings/Losses for 2018 MSSP ACOs. This is critical to note because of the idea that one cannot assume that a certain Quality Score predicts the potential for savings or losses.

The results for RQ2 (is there a statistically significant relationship between the Quality Score and Total Assigned Beneficiaries for 2018 Medicare Shared Savings Program Accountable Care Organization participants?) were that there was not a statistically significant relationship between Quality Score and Total Assigned Beneficiaries for 2018 Medicare Shared Savings Program Accountable Care Organization participants. The null hypothesis (there is no statistically significant relationship between the Quality Score and Total Assigned Beneficiaries for 2018 Medicare Shared Savings Program Accountable Care Organization participants) was accepted. The alternative hypothesis (there is a statistically significant relationship between the Quality Score and Total Assigned Beneficiaries for 2018 Medicare Shared Savings Program Accountable Care Organization participants) was rejected.

The findings for RQ2 were that there was no statistically significant relationship between Quality Score and Total Assigned Beneficiaries for 2018 Medicare Shared Savings Program Accountable Care Organization provider participants. The data showed that there is a very low likelihood that Total Assigned Beneficiaries impacted Quality Score in 2018 MSSP ACOs. Meaning, if Total Assigned Beneficiaries changed (up or down), Quality Score did not vary tremendously; thus, the statistical significance was low. The data showed no statistically significant argument that there is a statistically significant relationship between Quality Score and Total Assigned Beneficiaries; there is no correlation between the two variables. In summary, the dataset shows that Total Assigned Beneficiaries was not a predictor of Quality Score.

Any potential notion that 2018 MSSP ACO participants' Quality Score in 2018 MSSP ACOs could be impacted by Total Assigned Beneficiaries is refuted by these findings. The findings are important to MSSP ACO policy creation and program management. MSSP ACOs stakeholders (proponents and opponents alike) would likely want to review findings that show a lack of statistical significance between Quality Score and Total Assigned Beneficiaries for 2018 MSSP ACOs. This is critical to note because one cannot assume that the total number of assigned beneficiaries predicts a certain Quality Score.

Important to recall are some notes from the literature review: the overarching goal of the MSSP should not be how many ACOs participate, but how successful those that *do* participate are in improving patient care (Meltzer, 2018) and sound management of quality could yield better beneficiary health care patterns (Beaton, 2018).

Section 4 will review the purpose of the doctoral research study, the reason the study was conducted, the key findings and interpretations of such, limitations of the study, recommendations for future research, and applications to professional practice and implications for social change.

Section 4: Application to Professional Practice and Implications for Social Change

The purpose of this study was to review and understand the relationship between generated total savings/losses, Quality Score, and total assigned beneficiaries for 2018 MSSP ACO participants. For this quantitative study, I used secondary data to address two research questions. This study needed to be conducted on a micro level to note the 2018 performance year relationship of quality and cost indicators for the managed population of the MSSP. On a macro level, this study needed to be conducted to understand the impact MSSPs have on the overarching U.S. health care goals to increase quality and decrease costs for managed populations in the Medicare space, moving more towards value-based care.

Even though the data analysis results showed no statistically significant relationship between Quality Score and Generated Total Savings/Losses nor between Quality Score and Total Assigned Beneficiaries for 2018 MSSP ACO provider participants, this study contributed to positive social change by creating a new vantage point for review of their quality, costs, and assigned beneficiaries. The development and understanding of ACO initiatives are essential pieces required for meeting federal value-based care and alternative payment model U.S. health care goals. From a quality perspective, this is critical for Medicare beneficiaries and from a cost perspective, this is important for U.S. taxpayers. Other methods one could use to better understand the relationship between quality and cost may be to review cost of services rendered by different provider types (e.g., specialist, primary care provider, or other advanced practicing provider) or diagnosis across various service points (e.g., inpatient or

outpatient FQHCs, RHCs, SNFs, surgical centers, rehabilitation centers, etc.). Additionally, reviewing geography, ethnicity, gender, and/or age groups would likely yield different results than those found in this study.

The data statistics consisted of public data from the CMS, a federal resource, for the MSSP ACO 2018 performance year. This allowed me to employ recent data via a standard analytical file to efficiently summarize information for Medicare beneficiaries and ACO providers for the 2018 performance year of the MSSP. In this research study, I noted the relationship amongst Generated Total Savings/Losses, Quality Score, and Total Assigned Beneficiaries, reviewed the literature, and presented potential further research on whether MSSP ACOs can be considered as a way to lower costs and increase quality as it relates to serving the Medicare population. The results of this study showed no statistical significance between Quality Score and Generated Total Savings/Losses and no statistical significance between Quality Score and Total Assigned Beneficiaries. Understanding these results, further research could focus on other MSSP ACO performance years, addition of further variables (within the constraints of MSSP ACOs or not) or other variables impacting overall quality and cost.

In RQ1, the predictor/independent variable was Quality Score and the outcome/dependent variable was Generated Total Savings/Losses. The key findings from the data analysis were that there was no statistically significant relationship between Quality Score and Generated Total Savings/Losses for 2018 Medicare Shared Savings Program Accountable Care Organization provider participants. The null hypothesis was accepted and the alternative hypothesis was rejected. The results of the simple linear

regression data analysis indicated there was a very low likelihood (i.e., no statistically significant relationship) that the Quality Score impacted Generated Total Savings (or) Losses in 2018 MSSP ACOs, meaning that if Quality Score changed (up or down), Generated Total Savings/Losses did not vary tremendously. In summary, the dataset review showed that Quality Score was not a predictor of Generated Total Savings/Losses.

In RQ2, the predictor/independent variable was Total Assigned Beneficiaries and the outcome/dependent variable was Quality Score. The simple linear regression data analysis concluded that there was no statistically significant relationship between Quality Score and Total Assigned Beneficiaries for 2018 Medicare Shared Savings Program Accountable Care Organization provider participants. The null hypothesis was accepted and the alternative hypothesis was rejected. The data indicated there was a very low likelihood (i.e., no statistically significant relationship) that Total Assigned Beneficiaries impacted Quality Score in 2018 MSSP ACOs. In other words, if Total Assigned Beneficiaries changed (up or down), Quality Score did not vary tremendously. In summary, the dataset review noted that Total Assigned Beneficiaries was not a predictor of Quality Score.

The findings of the research questions are important. While, quantitatively, this study's results found that there were no statistically significant findings for either research question, future analysts of the same dataset could review other variables outside of those analyzed herein: Quality Score, Generated Total Savings/Losses and Total Assigned Beneficiaries of 2018 MSSP ACOs to find some levels of statistically significance related to quality and costs of the assigned beneficiaries. Examples of

variables that could be studied include, but are not limited to, ACO participation start date, track, type, SNF waiver participant, benchmark, revenue expense category and per capita expenses. Additionally, the statistical significance of the relationship amongst Quality Score, Generated Total Savings/Losses and Quality Score and Total Assigned Beneficiaries could be studied for other MSSP ACO performance years (e.g., 2012, 2013, 2014, 2015, 2016, 2017, 2019 and beyond). Additionally, reviewing patient satisfaction surveys specifically related to quality of care could create an avenue of additional research.

Interpretation of the Findings

The data analysis findings contrasted with the literature review presented in Section 1 of this study. Whereas the literature pointed to variable (cost, quality, attributed beneficiaries) connectivity, the data analysis did not yield a statistical significance between the independent and dependent variables included in the research questions.

In terms of the theoretical framework, the study's findings align with GST, as noted earlier in this work. U.S. health care is a system with complex interacting elements, continually evolving parts, emerging properties, and broad concepts in a dynamic and active ecosphere with various outcomes. GST is applicable and helps make sense of the contrasting literature review and data analysis. Since the data analysis showed no statistical significance between Quality Score, Generated Total Savings/Losses, and Total Assigned Beneficiaries, there could be randomness occurring with MSSP ACOs increasing quality and decreasing cost overall. The fact that various layers exist in the system that relates their intersecting trends and patterns helps a reviewer understand

behaviors of interrelatedness and interdependence can differ quantitatively versus qualitatively.

The scope of the study allowed for analysis and interpretation of the data. The findings showed no statistically significant relationship between Quality Score and Generated Total Savings/Losses, and there was no statistically significant relationship between total Assigned Beneficiaries for 2018 MSSP ACOs.

Limitations of the Study

This work's limitations included data, analysis, and trending reports provided by the federal government and engaged, interested, likely proponents, and/or participating organizations of MSSPs for the years of implementation, participation, and reporting. Therefore, the findings in terms of quality, cost and beneficiaries (Quality Score does not have a statistically significant relationship with Total Generated Savings/Losses and Quality Score does not have a statistically significant relationship with Total Assigned Beneficiaries) cannot be representative of the entire health care system nor even all of the Medicare-eligible population (as a large percentage of beneficiaries participate in a Medicare Advantage plan or none, at all) and does not compare MSSP ACOs to non MSSPs ACO that may also be generating a higher value for the same variables of this study. While the Medicare FFS program may show that certain MSSP ACOs have generated savings for that specific sector of the population, it does not negate that the entire system’s cost could still be rising, and quality could still be declining.

The challenges that arise when one attempts to review a relatively new program in a dynamic environment in an evolving, ever-changing system are that things do not

remain static. It is difficult to ensure sound statistical analysis when there are frequent changes, year-over-year, to the quality measures or the cost-savings factors. Systematic and technical adjustments, as well as realignment, must be made by providers that may cause indifferent results. It is difficult to measure certain quality metrics when there are so many outlying issues affecting the result. One must review data and reasoning but understand there are retrospective changes that occur and arguments to the methodology that make sense in the space that must be considered. Other initiatives, alternative and bundled payment methodologies, changes in Medicare rules, inpatient and outpatient treatment differentials, skilled nursing and rehabilitation components, and various other advents of evidence-based practices geared toward ensuring proper care across all provider types can have a compounding, comprehensive effect on MSSP ACOs quality, costs, and attributed beneficiaries. These extraneous variables change constantly throughout a MSSP ACO's performance year and have an impact on cost and quality.

The data analysis allowed for further audit of generalizability limitations. One cannot consider the general notion that all Medicare beneficiary pools would yield this study's same results in terms of cost and quality relationships. Relatedly, there cannot be a generalization made that all MSSP ACO provider participants in various performance years would render services that result in similar findings. It can be generalized that Medicare beneficiaries are not all treated equitably in terms of accountable care service renderings and outcomes-based measurement amongst different providers across various programs in disparate geographies.

The trustworthiness of the findings was as deep and broad as the CMS data sharing would allow. The CMS' MSSP ACO program follows data integrity and transparency principles appropriate for federal source data. As noted earlier in this work, the data's validity via the published dataset on the CMS government website has been argued as unable to predict counterfactual scenarios. Specifically, it is hard to know what would have been spent on CMS covered benefits for the population served if ACOs did not exist (LaPointe, 2017). This instrument was previously used in performance years 2012, 2013, 2014, 2016, and 2017 with the same Medicare population but with slightly different measures and modes of interpretation.

The data's validity does not consider other potential interaction effects and reactiveness of arrangements or program participation maturity, experimental mortality, equitable risk ownership, and selection interaction.

Also noted earlier in this study, the reliability concerns that arose with the secondary data set included the difficulty, or near impossibility, of extracting the effects that other Medicare changes, regulations and programs have on the MSSP. For example, and as previously noted in this study, changes in Medicare rules regarding inpatient days, bundled payments for services, and other advents geared toward ensuring proper care across all provider types can and will very likely have a compounding, comprehensive effect on other initiatives being studied, such as MSSP ACOs. This is beyond the scope of this work but is a means for future study.

Recommendations

This study reviewed Quality Score, Generated Total Savings/Losses, and Total Assigned Beneficiaries of MSSP ACOs in the 2018 performance year. Recommendations for further research include expanding the review to analyze other MSSP ACO variables such as expenses per capita, place of service, admission rates, number of managed beneficiaries, Hierarchical Condition Category (HCC) risk scores of certain conditions; related to geography, age range, race and/or gender or assessing other performance years' MSSP ACO dataset. By expanding the review, analyzing additional variables and/or assessing different performance years, it could benefit interested parties to provide expanded context on overall MSSP ACO success

Another option for future research could be to analyze the same independent and independent variables of this study, but for other MSSP ACO performance years to confirm, refute and/or compare this study's findings. In addition to the opportunity to review performance years 2012-2017, reviewing 2019 MSSP ACO data (and 2020 when it becomes publicly available in late 2021) would be appropriate to understand year-over-year matured variation in the three variables reviewed in this study. These recommendations are grounded in the strengths and limitations of the current study and literature reviewed in Section 1 and did not exceed the study boundaries.

As Falk (2016) noted, there have been studies that showed statistically significant correlations of data elements related to MSSP ACO generated savings, but none to date, that analyze the relationship between costs and quality as it relates to total assigned

beneficiaries. This study helps fill the gap that Falk (2016) examined (on 2014 MSSP data) that was present at the time of writing.

Implications for Professional Practice and Social Change

Professional Practice

A competitive strategic approach for health care administrators leading various health care organizations is in many ways dependent on properly understanding the relationship of quality and cost measures to the population under organizational management (Arsita & Idris, 2019). For example, quality improvements could lead to an increase in generated total savings.

This study offers health care administrative and clinical professionals' practical evidence and understanding of the relationship between Quality Score, Generated Total Savings/Losses, and Total Assigned Beneficiaries among 2018 MSSP ACOs and what could continue to be examined in the future as it relates to the MSSP. The extraneous variables noted in this study could be addressed and opportunities and/or suggestions for control could be provided. The literature review helped support the professional practice of health care, in general. It demonstrated practical application by presenting that MSSP ACOs may be an avenue for reaching the overarching U.S. health care system goals of achieving better care for individuals and better health for populations while lowering the growth in expenditures (National Association of ACOs, 2018).

The results of this study yield no statistically significant relationship between Quality Score and Generated Total Savings/Losses nor between Quality Score and Total Assigned Beneficiaries for 2018 MSSP ACO provider participants. The outcomes of this

research allow for further understanding of the statistical significance between cost, quality, and beneficiaries. This examination of 2018 MSSP ACOs renders useful findings that can either confirm or refute MSSP ACO stakeholder thoughts and opinions and initiate potential next steps relevant to organizational needs. By utilizing this evidence, interested parties can better understand the statistically significant relationship between cost, quality, and beneficiary variables in the 2018 MSSP ACO performance year data. Stakeholders can use this information to argue for or against further advancing MSSP ACOs. For example, as this study's findings yield there is no statistically significant relationship between Quality Score and Total Generated Savings/Losses, one could argue for 2018 MSSP ACO participants that it does not matter what the Quality Score is, there is not a predictability factor for Total Generated Savings/Losses as it relates to the MSSP. Similarly, as this study's findings yield there is no statistically significant relationship between Quality Score and Total Assigned Beneficiaries, one could argue that it doesn't matter how large the attributed managed population is, there is not a predictability related to overall Quality Score.

As previously noted in this study, extraneous variables likely played a role in the results of this analysis. For example, this study did not take into account if the reviewed 2018 MSSP ACO participants engaged in any other CMS healthcare transformation efforts under accountable care (such as the Comprehensive End-Stage Renal Disease Care Model, the Medicare Health Care Quality Demonstration and the Vermont All-Payer ACO Model), episode-based payment initiatives (such as Bundled Payments for Care Improvement Initiative, Comprehensive Care for Joint Replacement Model and

Oncology Care Model) nor primary care transformation (Comprehensive Primary Care Plus, Independence at Home Demonstration and Primary Care First Model).

As such, there are serious practical implications and recommendations for professional practice. For example, NAACOs and other MSSP ACO proponents are interested in understanding the statistical significance of related elements (cost and quality included) that lead to the maturation of U.S. value-based health care. PPACA was predicated and the Center for Medicare and Medicaid Innovation has built further policies into the assumption and assertion that population health can be managed to increase the overall quality and decrease cost.

The methodological implications were grounded in a non-experimental research design using secondary data quantitative analysis of a PUF. This method was used because the data variables were studied but not manipulated in any way. The researcher had specific research questions and hypothesized the relationships among the independent and dependent variables. The methodology of inquiry was a systematic review and strategic analysis of said publicly available secondary data for MSSP ACO participants in the 2018 performance year to note the relationship between Quality Score to Generated Total Savings/Losses and Quality Score to Total Assigned Beneficiaries.

Theoretically, basing this study on GST allowed the researcher to review a complex system with interrelated and evolving parts. This study examined the 2018 MSSP ACO performance year, noting how participants behaved in the ever-changing health care environment and specifically reviewed the relationship between three different variables (Quality Score, Generated Total Savings/Losses, and Total Assigned

Beneficiaries). The implications of this study's theoretical foundation allowed for correlating how value-based care may help improve the U.S. health care system and understand the statistically significant relationship among the analyzed variables.

Implications from an empirical perspective included the data analysis that yielded no statistically significant relationship between Quality Score and Generated Total Savings/Losses, and there was no statistically significant relationship between Quality Score and Total Assigned Beneficiaries for 2018 MSSP ACO provider participants. This study's findings imply that Quality Score was not a predictor of Generated Total Savings/Losses and Total Assigned Beneficiaries was not a predictor of Quality Score for 2018 MSSP ACO performance year data.

Positive Social Change

Interested parties look to better understand how MSSP ACOs will lead to positive social change for health care stakeholders of all kinds: patients, providers, public payers, private constituents, policymakers, researchers, and the like. If MSSP ACOs can decrease U.S. health care costs while concurrently increasing quality for managed populations, there is a compelling argument for their staying power in the system. If able to maintain momentum and prove transformative, MSSP ACOs could forever change the health care landscape. One of the essential components of understanding how to scale the success of MSSP ACOs is to relate the variables and understand their impact (or not) on each other.

Success of value-based care and its ability to move the U.S. health care system toward higher quality and lower costs, will depend on understanding the markers of ACO success thus far, a continuation of initiatives that have worked well, and a development of

increased innovation geared towards improved quality and reduced costs (Moloney, 2015). Also, of importance is the need to further strengthen the program for longevity and viability (Sweeney, 2018).

This study reviewed the literature on MSSP ACOs and analyzed a public use file data set as it related to Generated Total Savings/Losses, Quality Score, and Total Assigned Beneficiaries in the 2018 performance year to understand the relationship between the variables. This study's findings have impacts for positive social change as it relates to value-based health care in the United States. Specifically, this study resulted in no statistically significant relationships between Quality Score and Generated Total Savings/Losses nor between Quality Score and Total Assigned Beneficiaries for 2018 MSSP ACO participants. The findings provide interested parties insights into how these specific variables of 2018 MSSP ACOs were correlated and the impact they had on each other in the performance year. Quality Score was not a statistically significant predictor of Generated Total Savings/Losses, and Total Assigned Beneficiaries was not a statistically significant predictor of Quality Score. Stakeholders can use this information to create further avenues of awareness that certain variables may or may not have correlations. The implications noted for social change did not exceed the study boundaries.

This study was conducted on a micro level to note the 2018 performance year relationship of quality and cost indicators for the managed population of the MSSP. On a macro level, this study was conducted to understand the relational impact MSSPs have on

the overarching U.S. health care goals to increase quality and decrease costs for managed populations in the Medicare space, moving more towards value-based care.

This study's positive social change includes the understanding of the relationship between quality, cost and total assigned beneficiaries and the related movement toward value-based care in terms of lowered costs and increased quality for the U.S. health care system, specifically stemming from 2018 MSSP ACOs. From a quality perspective, this is critical for Medicare beneficiaries, and from a cost perspective, this is important for U.S. taxpayers.

Conclusion

In conclusion, this study reviewed the literature on MSSP ACOs and analyzed a public use file data set as it related to Generated Total Savings/Losses, Quality Score and Total Assigned Beneficiaries in the 2018 performance year to understand the relationship between the variables. The purpose of the doctoral research study, the reason the study was conducted, the key findings and interpretations of such, limitations of the study, recommendations for future research, and applications to professional practice and implications for social change, were reviewed herein.

The literature review demonstrated that MSSP ACOs are an avenue to lower costs and increase quality related to serving Medicare beneficiaries. There were a multitude of sources that noted MSSP ACOs were a viable option for U.S. health care administrators to reach systemic goals due to their positive effect on cost and quality. Tu et al. (2015) posited that MSSP ACOs can help lessen the fragmentation and misalignment and move the United States towards more value-based health care renderings while improving

assigned population health and reducing costs. The National Association of Accountable Care Organizations (2018) argued that MSSP ACOs can help ensure care quality is enhanced. The OIG reported that most ACOs had instituted various strategies that have proven successful in lowering Medicare spending (King, 2019).

This study's data analysis yielded findings that there was no statistically significant relationship between Quality Score and Generated Total Savings/Losses and there was no statistically significant relationship between Quality Score and Total Assigned Beneficiaries for 2018 MSSP ACO provider participants. Quality Score was not a predictor of Generated Total Savings/Losses, and Total Assigned Beneficiaries was not a predictor of Quality Score.

It is an interesting circumstance and potentially controversial that the literature overarchingly argues MSSP ACOs increase quality and decrease costs for a particular managed patient population and the maturation of and participation in the program over time allows for further successes, but when the relationship of the pertinent variables is analyzed, there is no statistical significance between Quality Score and Generated Total Savings/Losses nor Quality Score and Total Assigned Beneficiaries.

Even though the data analysis results showed no statistically significant relationship between Quality Score and Generated Total Savings/Losses and no statistically significant relationship between Quality Score and Total Assigned Beneficiaries for 2018 MSSP ACO provider participants, this study contributed to positive social change by creating a new vantage point for quantitative review of their quality, costs and assigned beneficiaries.

As noted earlier in this study, and still of importance to recall, is the value that MSSP ACOs bring to the overall U.S. health care system. The literature supports that MSSP ACOs with elevated quality scores yield higher shared savings.

For future studies, qualitative, I would suggest looking at the same variables in a different manner or reviewing other/additional variables in the MSSP ACO dataset. Examples of various ways to look at the data in a quantitative manner include, but are not limited to, eliminating dollars spent on high-cost services, reviewing certain geographies and/or capturing only mature ACOs. Additionally, one could include patient satisfaction survey results, medical home loyalty, in-network service versus out-of-network service utilization and other factors to review Medicare beneficiary engagement in their overall health care. Engagement and satisfaction may better represent quality of care analysis in a qualitative review.

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Appendix: Permission to Use CMS MSSP ACO PUF Data

From: <SharedSavingsProgram@lmi.org>
Date: June 10, 2019 at 6:11:00 AM PDT
To: <crystal.wrigley@waldenu.edu>
Subject: [JIRA_CMS] MSSP ACO PUF (Use in Dissertation)

DO NOT REPLY TO THIS EMAIL AS THIS ACCOUNT IS NOT MONITORED

Dear Crystal Wrigley

Thank you for contacting us, please see below for the answer to your question.

Question:

Please confirm it is permissible to use the MSSO ACO PUF data as a doctoral dissertation source.

https://www.cms.gov/Research-Statistics-Data-and-Systems/Downloadable-Public-Use-Files/SSPACO/index.html

Answer:

As these files are available to the public and were created by CMS to address the requests for ACO Shared Savings Program data, it is permissible to use the MSSP ACO PUF data as a doctoral dissertation source.

Regards, The Medicare Shared Savings Program Staff

Medicare Shared Savings Program Staff
CENTERS FOR **M**EDICARE & **M**EDICAID **S**ERVICES
7500 Security Boulevard | Baltimore, MD 21244 | e-mail SharedSavingsProgram@cms.hhs.gov | web http://www.cms.gov/sharedsavingsprogram