

Evaluation of the Graduate Nurse Education Demonstration Project:
Report to Congress

U.S. Department of Health and Human Services

September, 2017

Legislative Summary

The Graduate Nurse Education (GNE) demonstration project was established by section 5509 of the Patient Protection and Affordable Care Act of 2010, Pub. L. 111-148, which amended title XVIII of the Social Security Act by adding 42 U.S.C. 1395ww note. Section 5509 appropriated \$50 million for each fiscal year 2012 through 2015 without fiscal year limitation. Under this demonstration, the Centers for Medicare & Medicaid Services (CMS) was authorized to provide payments to eligible hospitals¹ for the reasonable costs they incurred in providing qualified clinical training to advanced practice registered nurse (APRN) students. The statute also required that participating hospitals enter into an agreement with eligible partners² for the provision of qualified training. The statute places an emphasis on primary care by requiring that at least half of the clinical training be provided in non-hospital community-based care settings. This requirement may be waived for rural or medically underserved areas.

The statute also requires an evaluation of the GNE demonstration project, no later than October 17, 2017, including an analysis of the following: (1) the growth in the number of APRNs with respect to a specific base year as a result of the demonstration; (2) the growth for each of the following specialties—clinical nurse specialist (CNS), nurse practitioner (NP), certified registered nurse anesthetist (CRNA), and certified nurse-midwife (CNM); (3) the costs to the Medicare program under title XVIII of the Social Security Act as a result of the demonstration; and (4) other items the Secretary determines appropriate and relevant.

Background

By 2025, the United States will need an additional 23,640 primary care physician provider full time equivalents to meet growing demands associated with expanded access to insurance, and especially with the aging of the population. The proportion of people over age 65 is increasing faster than the general population, and older individuals are likely to have chronic conditions and complex care needs.^{3,4} A shortage of primary care physicians is expected due to a declining number of medical students who choose primary care as their specialty.⁵ These trends pose challenges for the Medicare program, which will continue to be the largest insurer of the growing population of older Americans. Study findings suggest that nurse practitioners can augment and expand physician capacity in many care settings. This may help alleviate the shortage of primary care physicians in 2025.^{6,7}

¹ The term "eligible hospital" means a hospital (as defined in sub section (e) of section 1861 of the Social security Act (42 U.S. C. 1395x)) or a critical access hospital (as defined in subsection (mm)(1) of such section) that has a written agreement in place with - (A) 1 or more applicable schools of nursing; and (B) 2 or more applicable non-hospital community-based care settings.

² The term "eligible partner" includes the following (A) an applicable non-hospital community-based care setting; (B) An applicable school of nursing.

³ U.S. Department of Health and Human Services. (2016). National and Regional Projections of Supply and Demand for Primary Care Practitioners 2013-2025. National Center for Health Workforce Analysis.

⁴ Petterson, S. M., Liaw, W. R., Philips, R. L., Rabin, D. L., Meyers, D. S., & Bazemore, A. W. (2012). Projecting U.S. primary care physician workforce needs: 2010-2025. *Annals of Family Medicine*, 10(6), 503-509.

⁵ Association of American Medical Colleges. (2013). *Successful Primary Care Programs: Creating the Workforce We Need*. Subcommittee on Primary Health and Aging, Committee on Health, Education, Labor, and Pensions (HELP).

⁶ Rohrer, J. E., K. B. Angstman, G. M. Garrison, J. L. Pecina, J. A. Maxson. 2013. Nurse Practitioners and Physician Assistants Are Complements to Family Medicine Physicians. *Population Health Management* 16(4):242-45,

⁷ Horrocks, S., E. Anderson, and C. Salisbury. 2002. "Systematic Review of Whether Nurse Practitioners Working in Primary Care Can Provide Equivalent Care to Doctors." *British Medical Journal* 324:819-823 [accessed 5/11/2016]. Available from: <http://www.bmj.com/content/324/7341/819>

APRNs are registered nurses (RNs) who have completed specific graduate-level education programs in nursing and have passed a national certification examination. Like a physician or physician's assistant APRNs assess, diagnose, manage patient problems, order and conduct diagnostic tests and laboratory work, perform in-office procedures, and prescribe medications.

APRN students complete graduate-level courses in advanced physiology and pathophysiology, health assessment and pharmacology, as well as appropriate clinical experiences. APRN students are eligible to sit for professional certification after completion of their graduate education program.⁸ This advanced training and certification enables APRNs to deliver safe, competent, high-quality care to patients.⁹ APRNs are licensed to deliver care consistent with their areas of expertise and the laws that govern nursing scope of practice in each state.¹⁰

In 2011, the Institute of Medicine issued recommendations to promote growth in the role of APRNs in primary care and to encourage an improved education system that enables nurses to more easily obtain advanced education in SONs.¹¹ APRN graduations are increasing at the approximately 350 academic institutions that provide such training, highlighting the importance of SONs in building the primary care workforce of the future.^{12,13} However, SONs continue to face significant challenges in increasing enrollment, including difficulty in finding clinical practicum sites, and preceptors to provide one-on-one mentoring and supervision of APRN students. In addition, a limited number of graduate-level faculty are available to mentor clinical preceptors and supervise student practicum experiences.

The GNE demonstration project aims to mitigate some of these challenges by increasing the opportunities for clinical practicum sites and preceptors.

The GNE Demonstration Project

Per statute, under the GNE demonstration project, CMS provided payment to five eligible hospital awardees for the reasonable costs attributable to providing qualified clinical training to APRN students enrolled as a result of the demonstration. Reasonable costs include only those clinical training costs that are not covered by other revenue sources. Costs associated with didactic training, certification, and licensure are not eligible for payment under the demonstration.

The hospitals participating in the demonstration were required to partner with accredited schools of nursing, and non-hospital community-based care settings (CCSs), but also, partnered with other hospitals in an effort to expand the number of APRN students receiving qualified clinical training. The need for primary care access is especially critical in underserved areas of the country. As such, CMS not only aimed to increase the overall number of primary care providers, but also to expand primary care access to underserved areas of the country. Therefore, consistent with the statutory requirement, CMS required hospitals participating in the demonstration to ensure students completed at least half of their qualified

⁸ National Council of State Board of Nursing: https://www.ncsbn.org/Consensus_Model_for_APRN_Regulation_July_2008.pdf

⁹ American Nurses Association. (2011) 2011 ANA Health and Safety Survey. Silver Spring, MD.

¹⁰ National Council of State Board of Nursing: https://www.ncsbn.org/Consensus_Model_for_APRN_Regulation_July_2008.pdf

¹¹ Institute of Medicine. (2011). *The Future of Nursing: Leading Change, Advancing Health*. Washington, DC: National Academies Press.

¹² American Association of Nurse Practitioners. (2016). Education. <https://www.aanp.org/education/61-education/faq-np-prep/306-how-many-np-programs-are-there>. Accessed January 4, 2016.

¹³ Fang, D., Li, Y., Arietti, R., & Bednash, G.D. (2014). 2013 – 2014 enrollment and graduations in baccalaureate and graduate programs in nursing. Washington, D.C. American Association of Colleges of Nursing.

clinical education in such settings. These settings included federally qualified health centers (FQHCs) and/or rural health clinics (RHCs).

Payments to the participating hospitals are linked directly to the number of “incremental,” or, additional APRN students that the hospitals and their partnering entities educate as a result of their participation in the demonstration. The payment is calculated on a per incremental student basis, by comparing enrollment levels in the APRN programs during the baseline period i.e. January 2006–December 2010¹⁴ to increased enrollment under the demonstration. Participating hospitals reimbursed their partners for the reasonable cost of providing qualified clinical training to APRN students based on their established agreements.

The participating hospitals receive monthly interim payments derived from their projected budget estimates based on the expected number of incremental students, divided by 12 months, for allowable and reasonable costs incurred for the provision of incremental APRN students’ clinical education. These payments are calculated using the allowable costs derived from the updated budget estimates and enrollment information that the hospitals provide to CMS. The following year an independent audit is completed during which any reconciliations are made. Any interim payments that exceed the actual reasonable GNE costs are paid back to CMS. Conversely, CMS pays the hospital a one-time lump sum in the event that the GNE interim payments are less than the actual reasonable GNE costs, with the limitation that the demonstration expenditures not exceed the amount of funds appropriated under the authorizing statute. Table 1 below provides the total payment each awardee received over the first 4-year demonstration period.

Overview of the GNE Demonstration Project Awardees

In a competitive selection process, CMS awarded the following five hospitals the opportunity to participate in the GNE demonstration project:

- Duke University Hospital (DUH), Durham, North Carolina
- Hospital of the University of Pennsylvania (HUP), Philadelphia, Pennsylvania
- Memorial Hermann -Texas Medical Center (MH), Houston, Texas
- Rush University Medical Center (RUMC), Chicago, Illinois
- HonorHealth Scottsdale Osborn Medical Center (SHC), Scottsdale, Arizona

¹⁴ The legislatively established baseline period is January 2006–December 2010.

Each hospital participant formed a network partnership composed of other hospitals, SONs, and CCSs that together developed network-specific processes and priorities for implementing the demonstration. Each network established a GNE strategic planning and oversight team, and engaged SONs administrators, clinical administrators, clinical placement coordinators, and preceptors to implement the demonstration project. A summary of the five GNE networks is described in Table 1 below.

Table 1. Summary of Characteristics of the GNE Demonstration Networks

	Duke University Hospital	Hospital of the University of Pennsylvania	Memorial Hermann-Texas Medical Center	Rush University Medical Center	Scottsdale Healthcare Osborn Medical Center
Partner Hospitals	5	8	2	3	4
Partner Schools of Nursing	1	9	4	1	4
Partner Community-Based Care Settings (CCS)	More than 150 CCS ¹⁵ , affiliated practice primary care network, community clinics, free clinic, other CCS	More than 150 ¹⁶ hospital- and non-hospital-affiliated CCS, stand-alone nurse-managed primary-care clinics, FQHCs	More than 150 CCS ¹⁷ , clinics surrounding SONs, FQHCs, physician group primary-care practices, hospice, home health	25 CCS ¹⁸ in greater Chicago area and adjoining rural counties; initially 5 large community organizations	More than 1,000 CCS ¹⁹ , FQHCs, RHCs, primary-care practices, nurse-run clinics, home health, long-term care
Geographic Area	Regional, generally within approximately a 60-mile radius	Greater Philadelphia area with regional reach; 44 northern and central counties served by 1 partner	Southeastern Texas, near the Gulf Coast	Greater Chicago area and adjoining counties in Illinois	Large region across Arizona, other southwest border states, and parts of Mexico
APRN Specialty	NP, CNS, CRNA	NP, CNS, CRNA, CNM	NP, CRNA	NP, CNS, CRNA	NP, CNS
Total Payment	\$10,696,200	\$42,942,600	\$35,750,600	\$9,243,400	\$21,841,700

GNE Demonstration Project Timeline

The GNE demonstration project was initially implemented in July 2012 for a 4-year period. Because there were appropriations available at the end of the four-year period, and the statute permits the use of these funds without fiscal year limitation, CMS extended the demonstration for an additional two years through July 2018, to allow sufficient time for (1) the incremental APRN students enrolled under the demonstration project to complete their required clinical education, and (2) more accurate measurement of APRN student graduation rates under the demonstration project.

Evaluation of the GNE Demonstration Project

Section 5509 mandates an independent evaluation of the GNE demonstration project, to determine whether payments to participating hospitals for clinical training resulted in overall growth in APRN students by the four named clinical specialties, relative to the specific base year. In addition, the evaluation examined the costs to the Medicare program by determining the overall cost for implementing the GNE demonstration as well as the cost to CMS for supporting an incremental APRN

¹⁵ Duke 2015 GNE semi-annual report

¹⁶ HUP 2015 GNE semi-annual report

¹⁷ Texas Gulf Coast 2015 semi-annual report

¹⁸ Rush 2015 semi-annual report

¹⁹ SHC 2015 semiannual report

student to graduate. In addition, the evaluation assessed the structure and characteristics of the networks, the implementation processes, successes, challenges, and spillover effects.

The main research questions that the evaluation addresses are:

- 1. How was the GNE demonstration project implemented and operated?**
 - a. What are the networks' characteristics and demonstration operation processes?
 - b. How does the demonstration influence precepted clinical education placements and the placement processes?
 - c. What notable successes and challenges do networks experience?
 - d. What are the networks' plans for sustainability?
- 2. How effective was the GNE demonstration project in increasing growth in the APRN workforce?**
 - a. What is the effect on APRN growth (i.e. student enrollment and graduation) overall?
 - b. What is the effect on APRN enrollment and graduation by specialty?
 - c. Is the demonstration associated with spillover effects to non-participating SONs?
- 3. What is the total cost of the demonstration project overall?**

Per mandate, this report addresses these questions for the first 4 years of the demonstration period.

Key Evaluation Findings

Key findings to date suggest that the GNE demonstration project had a positive impact on APRN student growth, and helped transform clinical education within participating GNE SONs. Evaluation findings related to the networks' implementation and operation, effect on APRN student enrollment and graduations, and the cost to CMS as a result of the demonstration are provided below.

1. How was the GNE demonstration project implemented and operated?

Network Characteristics

There is wide variability among the networks in terms of the size and composition of the five GNE networks' partnerships, the types of CCSs, and geographic areas. The number of partnerships among the networks varied for the hospitals from 2 to 8, and for the SONs from 1 to 9. The CCSs included free clinics, nurse practitioner managed clinics, federally qualified health centers, rural health clinics, Indian Health Service centers, as well as hospital-affiliated CCSs. The geographic areas included rural and rural-urban areas.

Demonstration Operation Processes

Over the course of the demonstration implementation, the network participants reported establishing several successful demonstration activities. However, participants across each network reported difficulties during the initial implementation of the demonstration due to limited staff time and financial resources available for program development. The five hospitals and partnering SONs used GNE payments to create or expand administrative resources devoted to managing and overseeing the clinical placement process. Some SONs used payments to hire dedicated clinical placement coordinators and/or clinical site recruiters. Others reported using the payments to develop a database system to track clinical placements, site/preceptor contact information, and type of site. None reported using the payments to

recruit preceptors directly. Instead, they explained to the clinical sites that there was a possibility they would receive payment.

Network partners used the GNE demonstration payments to develop and implement several innovative clinical education models. SONs in three of the five networks established inter-professional education models, in which APRN students complete their clinical education alongside medical, pharmacy, and psychology students. APRN students and GNE network administrators stated that this clinical education helped enrich students' experience by enhancing their medical, teamwork, and communication skills. SONs from two networks invested in clinical education sites that serve medically underserved populations, including securing placements in rural health centers and establishing a start-up preceptor program which places an affiliated preceptor at a clinical site previously unable or unwilling to provide clinical precepted education to APRN students.

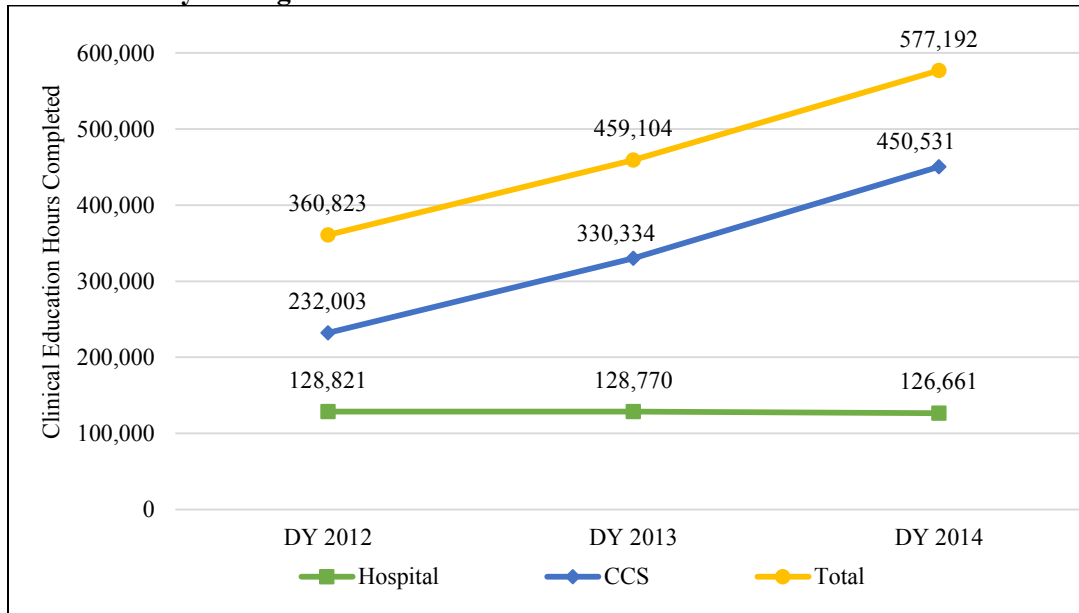
Clinical Education Placements and Processes

Interview participants reported that the GNE demonstration strengthened SONs' relationships with existing clinical education sites. Consistent with the objective of the demonstration, interviewees from all networks reported partnering with new CCSs whose staff had not precepted their students previously. They reported that the demonstration was expanding and diversifying precepted training opportunities.

The methods for determining which preceptors or training sites received GNE payments varied across networks. If the network designated a clinical education site, then that site received GNE payments for any student who was placed at that location. If the network designated students, then any clinical education site at which a GNE student was placed received GNE payments. The oversight teams of each GNE network determined whether sites or students would be designated as "GNE" and allocated the number of GNE sites or students each semester. Each network created its own payment methodology as part of program implementation, based on either the students' clinical hours, preceptors' lost productivity time, or Medicare fee schedules.

The number of clinical education hours completed by incremental APRN students in CCSs increased substantially with more than half of the clinical education hours occurring at CCSs compared to hospital settings (see Figure 1). This trend is consistent with the demonstration project's objective to expand clinical education in community settings.

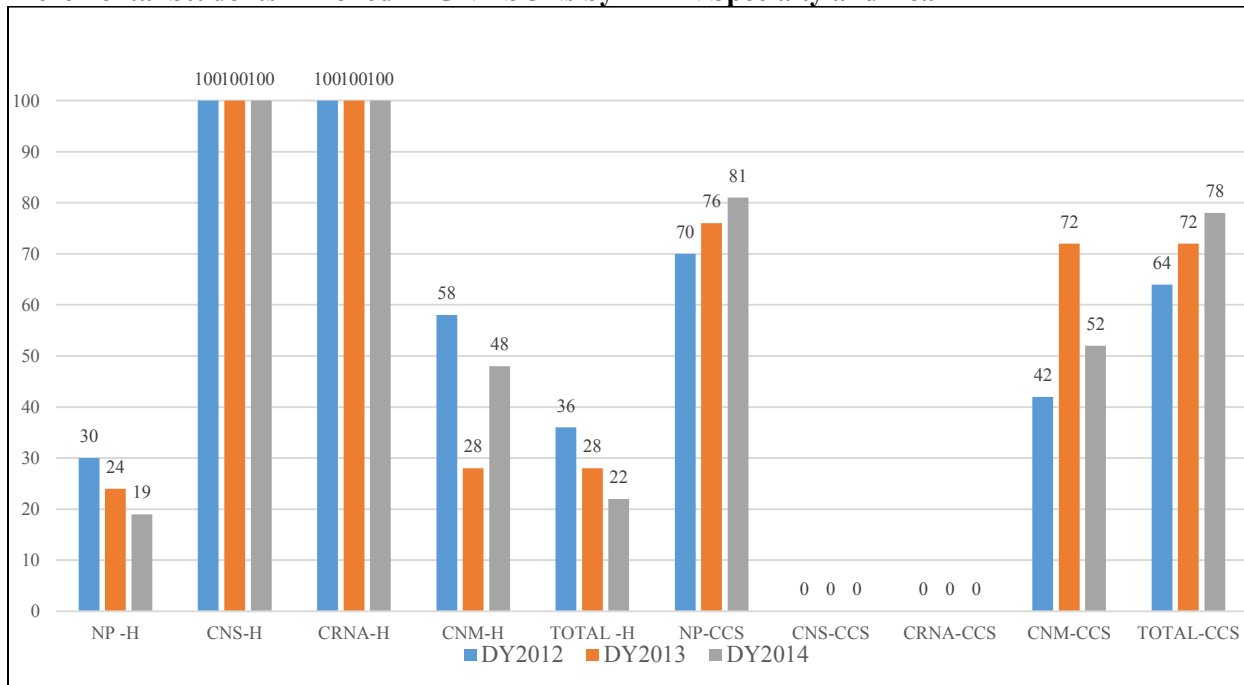
Figure 1. Clinical Education Hours Completed by Incremental APRN Students from DY 2012 – DY 2014, Overall and by Setting



Notes: DY = demonstration year; Data Source: GNE Audit Reports for 2012, 2013, and 2014

Figure 2 shows the percentage of clinical education hours completed at hospitals and CCS, by specialty and by demonstration year (DY). Clinical education hours completed at hospitals by incremental APRN students enrolled in the CNS and CRNA specialty remained at 100 percent hours whereas zero hours were completed at the CCS. Clinical education hours completed at hospitals by incremental APRN students enrolled in the NP specialty steadily declined during the demonstration period, but increased at the CCSs.

Figure 2. Percentage of Precepted Clinical Hours Completed at Hospital (H) and CCS Settings by Incremental Students Enrolled in GNE SONs by APRN Specialty and Year



Successes and Challenges

Networks reported that the demonstration created new and diverse precepted clinical education opportunities. For example, several networks developed inter-professional education for APRN students, where the APRN student precepts with a variety of other clinical students such as medical, psychology, and pharmacy. One network reported using start-up preceptors at clinical education sites that were previously unable or unwilling to provide clinical education to APRN students. Network participants described enhanced coordination between partners as well as across the networks themselves, and improvements to placement processes within and across SONs. They also stated that the demonstration project afforded time to focus on improving other aspects of APRN training, such as aligning curricula or admissions criteria. In addition, many interviewees stated that the demonstration project created a dialogue and encouraged greater awareness throughout the medical community about the role and value of APRNs in providing care.

Some demonstration networks reported that the design of the demonstration project made it challenging to implement. All networks reported having minimal start-up time at the beginning of the project, which obliged administrators to simultaneously plan, design and implement the demonstration. Due to the short time period between the demonstration award and the implementation, networks reported “playing catch-up” for most of the first demonstration year. In addition, the increase in enrollment strained faculty and university resources. Since GNE payments do not cover didactic education, the GNE SONs attempted to balance the goal of increasing the number of APRN students who graduate with the reality of limited resources. All networks reported difficulties during the implementation of the demonstration, due to limited staff time and financial resources available for program development.

Sustainability Plans

Participants’ views including the SON administrators, were mixed about the ability of the GNE SONs to maintain the increased number of APRN student enrollments and graduations after the GNE project ends. Many were optimistic that the relationships and increased communication across SONs and other network members will remain. For example one participant reported:

“The collaboration will sustain post-demonstration, but what that collaboration will look like is to be determined.”

However, they expressed concerns about whether the positive outcomes can be sustained after the demonstration project ends. For example one participant stated:

“We are concerned that sites will drop after the GNE money is gone. We have a group of clinics that it took a lot of effort to get them to take students, and funding was part of that agreement. I suspect that they will not continue.”

SON administrators and network leaders are currently discussing potential strategies to maintain the investments and processes developed through the GNE demonstration. Though not perceived as ideal, many SONs have considered increasing student enrollment in order to maintain the support staff that oversees the clinical placement process. A few stakeholders discussed pursuing grant opportunities as a way to sustain GNE activities and engaging local and state government officials.

In addition to exploring other funding sources, SONs are developing strategies to sustain current clinical education sites and preceptor levels beyond the demonstration period. Such strategies include new resources, trainings, and tokens of appreciation that networks stated will motivate preceptors to continue

engaging with their students. Networks reported that they will continue to discuss how to further solidify relationships and maintain key demonstration-facilitated investments over the next academic year.

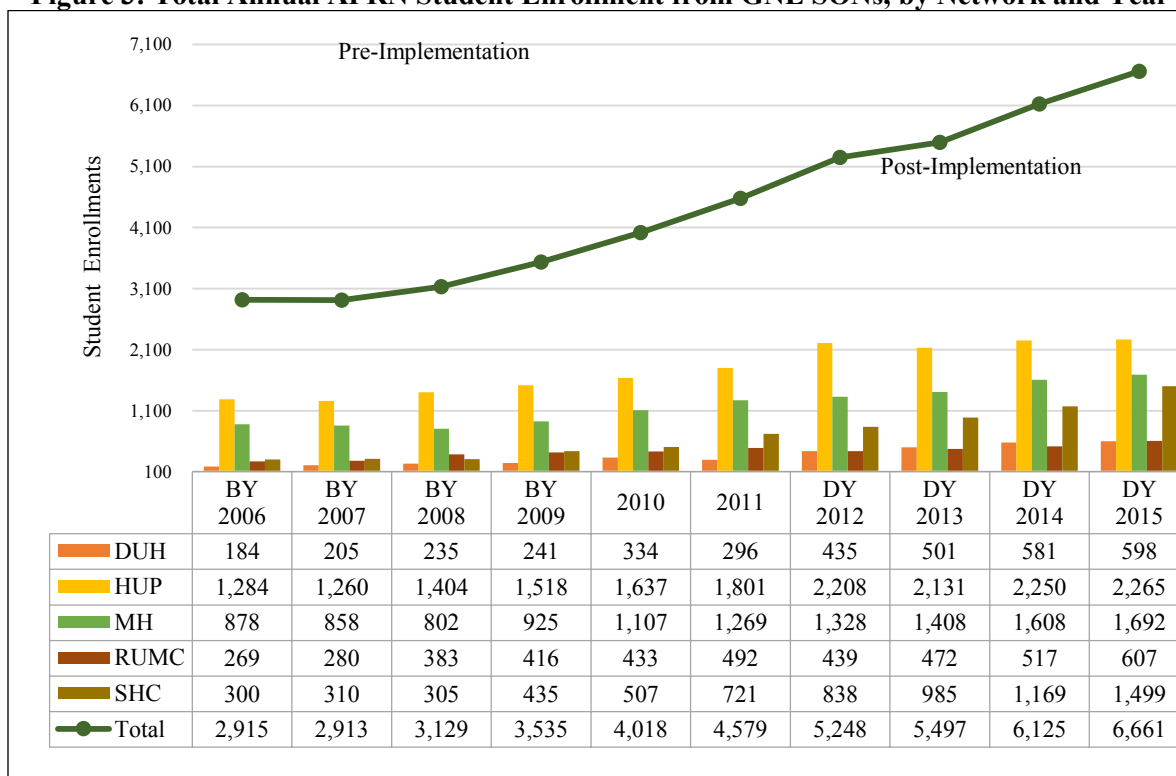
2. How effective was the GNE demonstration project in increasing growth in the APRN workforce?

APRN Student Growth

Descriptive analyses of the GNE SONs’ student enrollments and graduations show that there was an overall increase in enrollment and graduation for APRN students, with the majority of that increase associated with the NP specialty. While enrollment and graduation did increase as intended, it should be noted that the demonstration SONs had already begun to increase enrollment prior to the start of the demonstration.

Enrollment: Overall the total APRN student enrollments (both full-time and part-time) across all 19 GNE SONs increased steadily between DY_2012 and DY_2015 compared to the baseline year (BY) period (BY_2006-BY_2009)²⁰ as shown in Figure 3 below. Enrollments into the NP specialty appear to be the primary driver of this increase (see Figure 4).

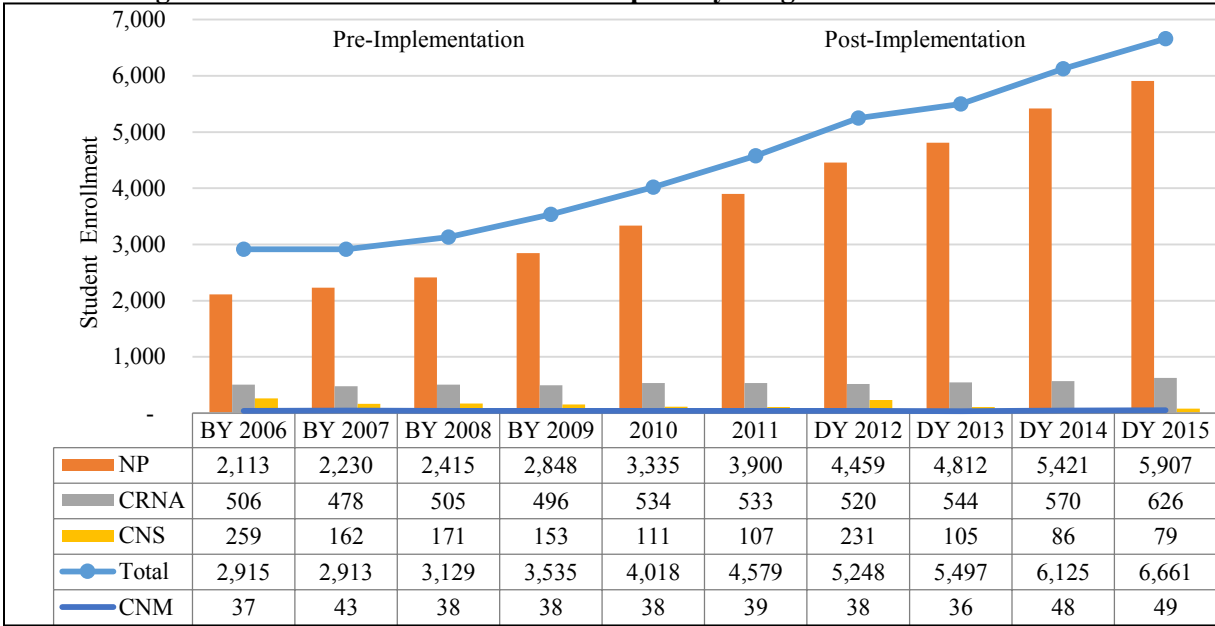
Figure 3: Total Annual APRN Student Enrollment from GNE SONs, by Network and Year



Source: American Association of Colleges of Nursing (AACN) annual institutional surveys

²⁰ AACN data used for the evaluation was available by academic year and not calendar year. As such the legislatively established baseline period January 2006 –December 2010 was defined as academic year 2006 /07 through 2009/10 for the evaluation. Neither the academic year 2005/06 nor 2010/11 were considered as part of the baseline period because calendar years 2005 and 2011 were not included in the legislatively-defined baseline.

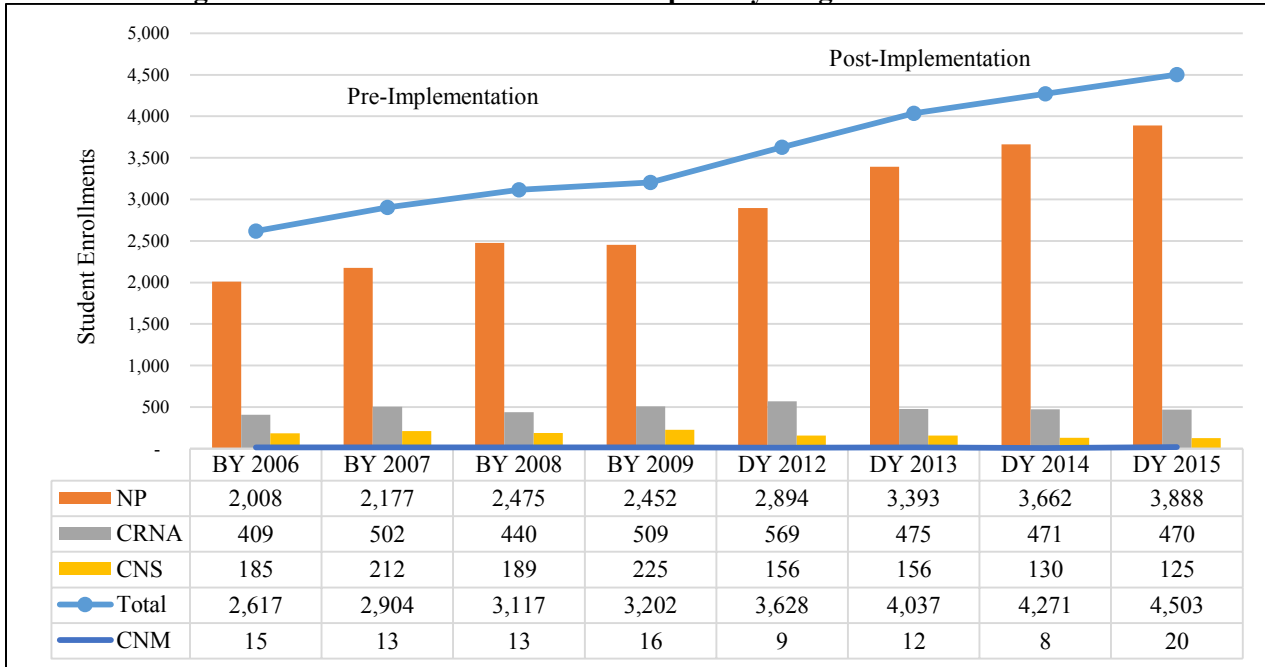
Figure 4: Total Student Enrollment in Specialty Programs across GNE SONS



Source: American Association of Colleges of Nursing (AACN) annual institutional surveys

Descriptive results indicate that the overall total APRN total student enrollments (both full-time and part-time) in the non-GNE SONS (comparison group) also increased steadily between DY_2012 and DY_2015 compared to the baseline period (BY_2006-BY_2009) which is driven primarily by increases in the NP specialty (see Figure 5).

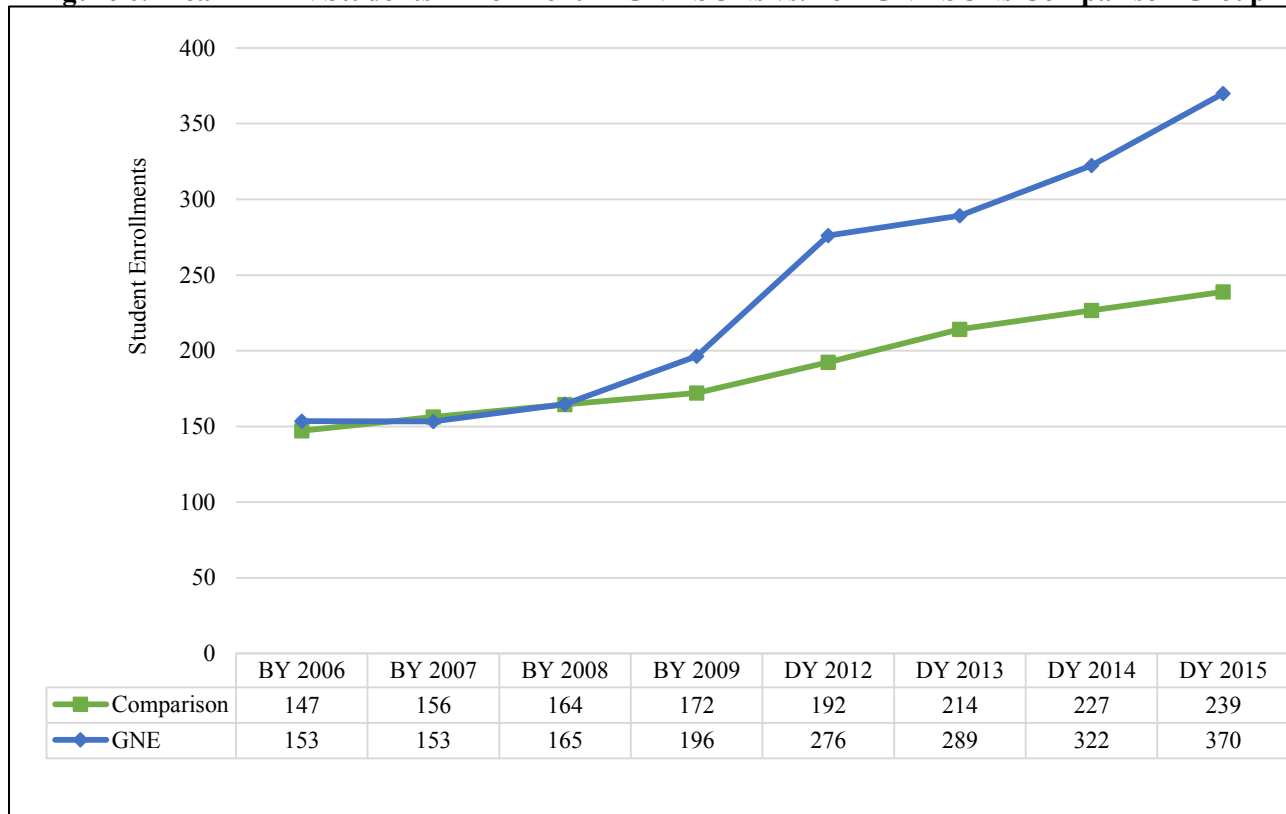
Figure 5: Total Student Enrollment in Specialty Programs across non-GNE SONS



Source: American Association of Colleges of Nursing (AACN) annual institutional surveys

Findings suggest that during the baseline period, the mean student enrollment trends for the GNE SONs and non-GNE SONs (comparison group) were almost the same but diverged prior to the start of the demonstration period resulting in higher increases in enrollment among the GNE SONs relative to the non-GNE SONs (see Figure 6).

Figure 6. Mean APRN Students Enrollment in GNE SONs vs. non-GNE SONs Comparison Group

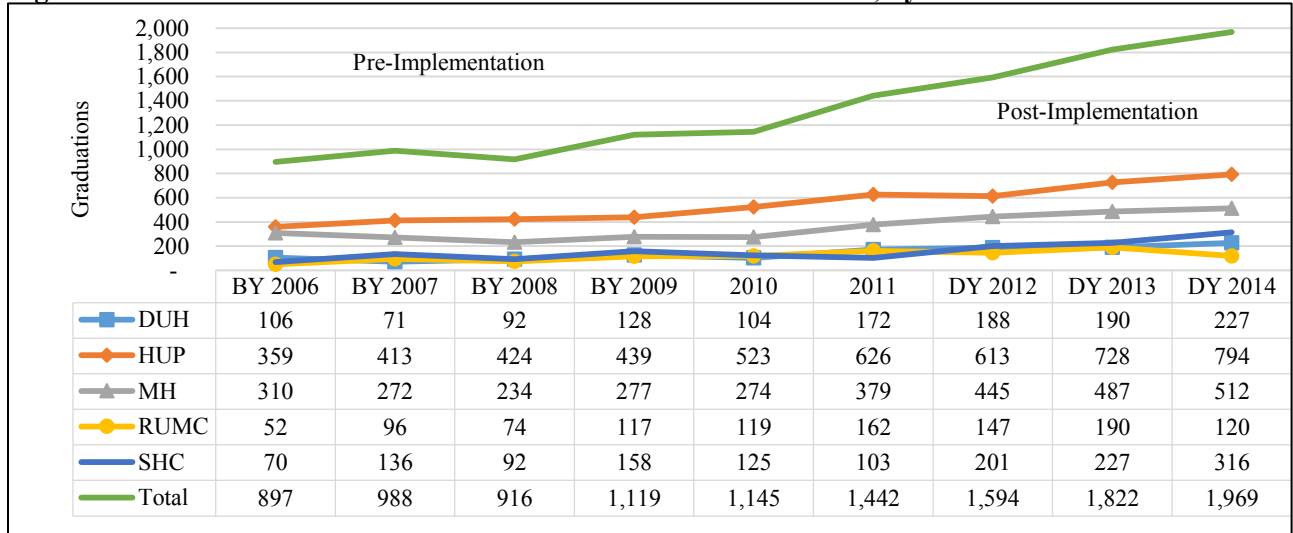


Source: American Association of Colleges of Nursing (AACN) annual institutional surveys

Notes: Baseline comparison group: weighted comparison group with weights found using entropy balancing on means, quadratic, and cubic terms.

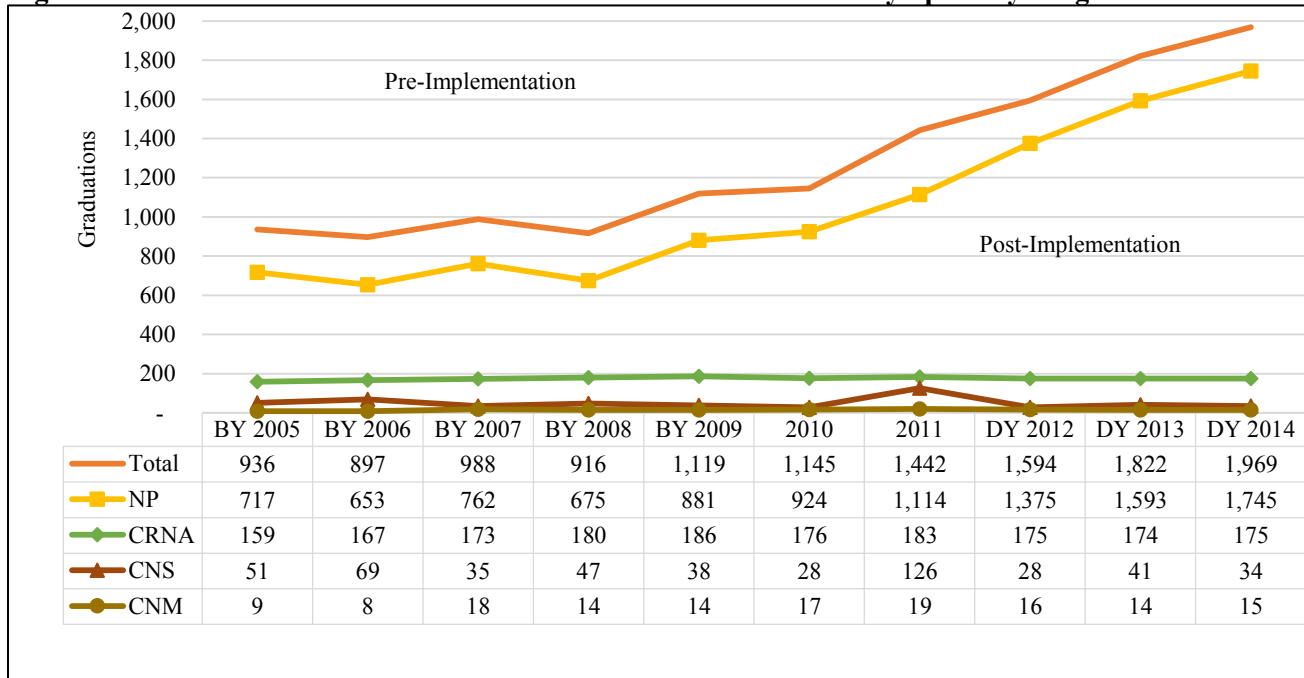
Graduation: Overall the total APRN total student graduations from GNE SONs increased steadily between DY_2012 and DY_2015 compared to the baseline period (BY_2006-BY_2009) as shown in Figure 7 below. Consistent with enrollment, graduations from the NP specialty were the primary driver of this increase (see Figure 8).

Figure 7. Total Annual APRN Student Graduations from GNE SONs, by Network and Year



Source: American Association of Colleges of Nursing (AACN) annual institutional surveys

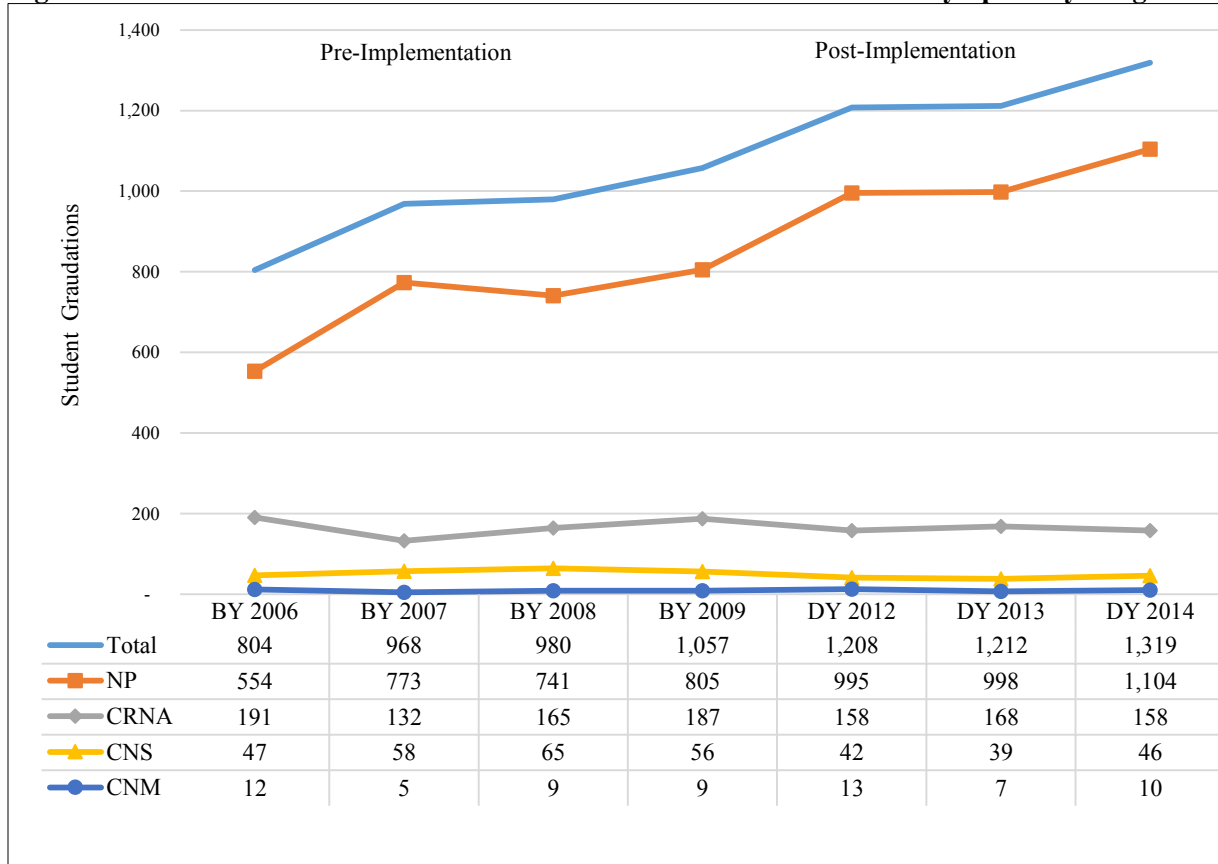
Figure 8. Total Annual APRN Student Graduation from GNE SONs by Specialty Programs



Source: American Association of Colleges of Nursing (AACN) annual institutional surveys
 Notes: APRN graduations are the sum of NP, CRNA, CNS and CNM graduations for that same year.

Results suggest that the overall total APRN total student graduations from non-GNE SONs increased steadily between DY_2012 and DY_2015 compared to the baseline period (BY_2006-BY_2009) as shown in Figure 9 below. Consistent with enrollment, graduations from the NP specialty were the primary driver of this increase.

Figure 9. Total Annual APRN Student Graduation from non-GNE SONs by Specialty Programs

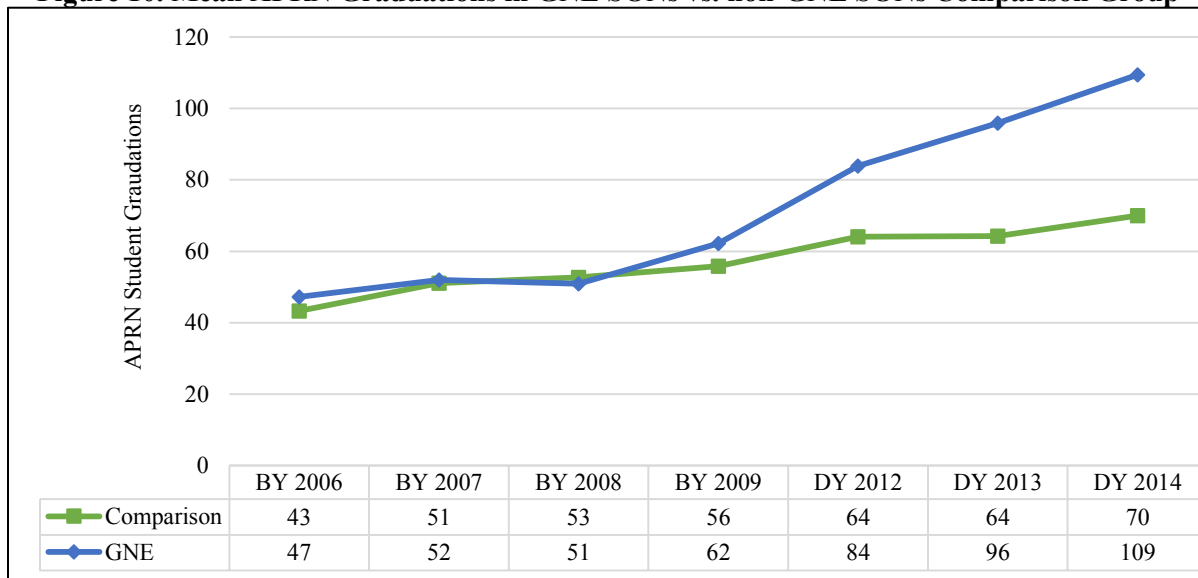


Source: American Association of Colleges of Nursing (AACN) annual institutional surveys

Notes: APRN graduations are the sum of NP, CRNA, CNS and CNM graduations for that same year.

During the baseline period, the mean student graduation trends for the GNE SONs and non-GNE SONs (comparison group) were almost the same, but diverged prior to the start of the demonstration period resulting in higher increases in graduation among the GNE SONs relative to the non-GNE SONs (see Figure 10).

Figure 10. Mean APRN Graduations in GNE SONs vs. non-GNE SONs Comparison Group



Notes: Information for APRN graduations is reported with a one-year lag. AACN’s 2015 Annual Institutional Survey reports graduation data for academic year August 1, 2014 through July 31, 2015. Baseline comparison group: weighted comparison group with weights found using entropy balancing on means, quadratic, and cubic terms.

Impact of the GNE Demonstration on APRN Student Growth: A regression analysis was used to estimate the impact of the GNE demonstration on APRN student enrollments and graduations across the GNE SONs relative to the non-GNE SONs comparison group. Similar to the descriptive analyses, results from the regression analyses suggest that the GNE SONs experienced higher increases in student enrollment and graduations as a result of the demonstration. While the findings from the descriptive and regression analyses are similar in direction, the regression based approach controls for measureable differences between the GNE SONs and the comparison group, and removes the influence of secular trend. Therefore, the regression based impact estimates represent the changes in enrollment levels and graduation rates attributable to the demonstration above what might have occurred naturally in the absence of the demonstration.

Specifically, the statistically significant regression results, show that compared to the non-GNE SONs, the overall APRN student enrollment (both full-time and part-time) in GNE SONs increased by an average of about 87 students per year, per SON, as a result of the demonstration. The regression results also indicate that compared to the non-GNE SONs, the overall APRN student graduation in GNE SONs increased by an average of about 28 students per year, per SON, as a result of the demonstration. Moreover, the regression findings suggest that compared to the non-GNE SONs, the APRN student enrollment for the NP specialty among the GNE SONs increased by about 84 students as a result of demonstration. Similarly, compared to the non-GNE SONs, the APRN student graduation for the NP specialty among the GNE SONs increased by about 27 students as a result of demonstration.

Qualitative findings suggest that many demonstration participants perceived a direct relationship between enhanced financial support for clinical placement processes and increased enrollment. However, others could not attribute increased enrollment solely to the demonstration project and reported that increases

were due to the upward trajectory of the health care field in general. Nonetheless, network participants reported unequivocally that without the GNE demonstration payments, sustaining increased enrollment would not be possible in their networks.

Spillover Effects

During the first year of the demonstration, non-GNE SONs claimed that increases in preceptorships among participating schools were resulting in fewer opportunities for clinical training sites for APRN students from their own schools. The evaluation examined whether APRN student enrollment and graduations at non-GNE SONs located in the same state and with characteristics similar to those of GNE SONs were impacted by the demonstration. Results of the regression analysis used to estimate any spillover effects, suggest that the demonstration project did not have spillover effects on APRN student enrollments or graduation among non-GNE SONs located in the same state as the GNE SONs. As such, there is no evidence to suggest unintended consequences of the demonstration project to nearby non-GNE SONs.

3. *What is the total cost of the demonstration project overall?*

The GNE demonstration project cost was comprehensively assessed using a 3-prong approach. First, we determined the cost for implementing the GNE demonstration. Next, we assessed the factors that influence the GNE SONs costs. Finally, we estimated the cost to CMS for supporting an incremental APRN student to graduate.

Cost for Implementing GNE Demonstration Project. The estimated overall cost of the GNE demonstration project was within the appropriated payments. The estimated cost for the first 4 years was \$120,474,500. This estimate is preliminary, since the fourth DY costs included in the overall cost estimate were projected and not based on audited data. The annual payments to the awardee hospitals for the first 4 years of the demonstration project ranged between \$17,873,500 and \$41,823,500, which was less than the maximum amount of \$50,000,000 appropriated for each fiscal year per requirements of the authorizing statute.

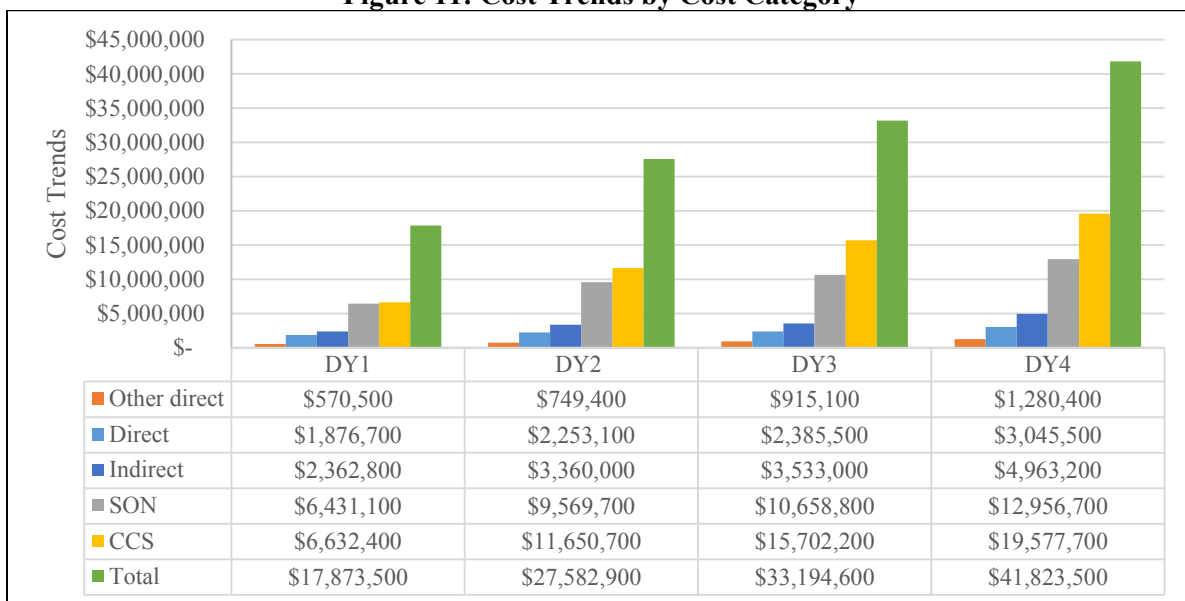
Table 2 below presents the actual payments to each demonstration network based on the audited reconciliation process for DY 1-3. The budgeted cost represents the DY4 payments to the demonstration networks based on the projected cost reported to CMS by each network.

Table 2. Total CMS Payments to the GNE Network by Demonstration Year (DY)

GNE Demonstration network	Audited cost			Budgeted cost	Total Payment
	DY1	DY2	DY3	DY4	DY1-DY4
Duke University Hospital	\$1,478,100	\$2,215,400	\$3,591,700	\$3,411,000	\$10,696,200
Hospital of the University of Pennsylvania	\$6,426,000	\$9,749,400	\$10,676,600	\$16,090,600	\$42,942,600
Memorial Hermann-Texas Medical Center	\$4,928,600	\$8,409,100	\$11,001,600	\$11,411,300	\$35,750,600
Rush University Medical Center	\$2,035,800	\$2,356,400	\$2,103,300	\$2,747,900	\$9,243,400
Scottsdale Healthcare Osborn Medical Center	\$3,005,000	\$4,852,600	\$5,821,400	\$8,162,700	\$21,841,700
Total Payment	\$17,873,500	\$27,582,900	\$33,194,600	\$41,823,500	\$120,474,500

Network and SON administrators reported making key investments in administrative staff and placement coordinators, data and information management systems, and implementation of innovative education models. The terms and conditions of the demonstration project required that half of the incremental clinical placements occur at community sites. Looking at the cost trend data in Figure 11 below, the costs of clinical precepted education in CCSs appear to be the main driver of demonstration expenditures, followed by the SON costs, indirect costs, direct costs, and the other direct costs associated with management and coordination of placement. The CCS costs represent CMS payments to the networks based on the audited number of incremental APRN students precepted. This suggests that networks spent most of the fiscal resources on recurring costs associated with the provision of clinical education. Other direct costs include several non-recurring costs, such as the acquisition of software and equipment, although all cost categories contributed to the estimated increase in total costs over time.

Figure 11: Cost Trends by Cost Category



Notes: Costs expressed in \$1,000,000s. DY1, DY2, and DY3 costs come from the GNE Audit Reports. DY4 costs come from the DY4 Budget Report, since the DY4 Audit and the DY4 Semi-Annual Reports were not available.

Factors Influencing GNE SONs Costs: The evaluation used a regression model to examine factors associated with SON total cost in 2011 dollars.²¹ Results of the regression analysis suggest that for each incremental APRN student, the total SON cost increased on average by \$9,400, holding all other factors constant.

Results also indicate that for every additional SON in the GNE network, the SON total costs decreased on average by \$48,800 for each incremental student. In other words, the average SON cost declines as the number of SONs in the network increase. The decrease in cost suggests networks with more than one SON have economies of scale in administering the demonstration because staff, equipment, and software can be shared across SONs.

Interestingly, having an affiliation with a hospital decreases the average SON costs by \$582,000. This may be because close relationships with hospitals offer the SON reliable and sufficient clinical sites and preceptors which mitigates the fiscal and human resources needed for finding clinical placements for

²¹ Factors include i.e. DY1, DY2, DY3, DY4, number of didactic/clinical faculty, affiliation with health center, affiliation with hospital, public status, city indicator, SON ranking, incremental APRN students relative to baseline

APRN students. Regardless, the regression results need to be interpreted with caution since unobservable factors were not accounted for in the model.

Cost to CMS for Supporting an Incremental APRN Student to Graduate. The evaluation also examined the cost for supporting an incremental APRN student to graduate as result of the GNE demonstration, by dividing the total demonstration cost (defined as the amount of money paid to the awardee hospitals) by the number of additional APRN students who graduated from the GNE SONs. The term “additional APRN students who graduated” was defined as the increase in the number of APRN students who graduated in relationship to the baseline period.

Three different methods were used to estimate the number of additional APRN students who graduated. The first two methods estimate an additional APRN student by counting the number of students who graduated from GNE SONs during the demonstration period that exceed the number of students who graduated during the baseline period, but each use different data sources. The first method uses the GNE audit data, and the second method uses the AACN survey data. These two methods show graduations from GNE SONs over time, but do not account for factors beyond the demonstration effect that might have encouraged increases in graduations.

The third method estimates the number of additional APRN students who graduated during the demonstration period using the results of the regression analysis for the impact of the GNE project on graduation. This estimate can be specifically attributed to the GNE demonstration. This method removes the increase in APRN student graduations occurring in GNE SONs that are a result of reasons other than the demonstration.

Additional students associated with each of the three methods:

1. The total number of additional APRN students who graduated during the demonstration period across all GNE SONs, using the independent audit data: **4,264.7** additional students.
2. The total number of additional APRN students who graduated during the demonstration period across all GNE SONs, using the AACN survey data: **3,832** additional students.
3. The total number of additional APRN students who graduated during the demonstration period across all GNE SONs, relative to the number of additional students who graduated in the non-GNE SONs comparison group during the same time, using the AACN survey data: **2,097.6** additional students.

Table 3 shows the preliminary cost to CMS for supporting an incremental APRN student who graduated as a result of the demonstration using the three different methods to estimate the additional APRN students.

Table 3. Cost to CMS for supporting an incremental APRN student to Graduate

	Estimate 1	Estimate 2	Estimate 3
Total cost of the GNE demonstration project (DY1-DY4)	\$120,474,500		
Estimated number of additional APRN student graduates	4,264.7	3,832	2,097.6
Data Source	Audit data for GNE SONs	AACN survey data for GNE SONs	AACN survey data for GNE and non-GNE SONs
Cost to CMS per APRN student	\$28,249	\$31,439	\$57,434

Three different cost estimates were calculated based on the three different methods used to define the number of additional APRN students who graduated. The first cost estimate, \$28,249, is based on the first method for estimating an additional APRN student by counting the number of students who graduated from GNE SONs during the demonstration period that exceed the number of students who graduated during the baseline period, using the GNE audit data.

The second cost estimate, \$31,439, is based on the second method for estimating an additional APRN student by counting the number of students who graduated from GNE SONs during the demonstration period that exceed the number of students who graduated during the baseline period, using the AACN survey data. The third cost estimate, \$57,434, is based on the third method for estimating an additional APRN student by counting the number of students who graduated during the demonstration period that can be specifically attributed to the GNE demonstration, using the regression analysis results for the impact of the GNE project, using AACN survey data.

The third cost estimate is the largest, as the total cost of the demonstration is distributed among fewer students than the first two estimates. This is because the third cost estimate assumes that, in the absence of the demonstration, the number of APRN students who graduate would have increased, anyway. The estimate accounts for that increase by counting only the number of additional student who graduated as a result of the demonstration. This estimate can be considered more precise, because it considers a reasonable assumption about the APRN growth.

It is important to note that, because the demonstration is still ongoing, both the total cost of the demonstration and the total number of additional APRN students who graduate will change. As such, the three cost estimates are preliminary and should not be considered a true assessment of the cost to CMS for supporting an incremental APRN student to graduate.

Limitations of the Evaluation of the GNE Demonstration

Several limitations apply to the evaluation of the demonstration project. The 19 participating SONs in the demonstration are a relatively small portion of the over 420 SONs nationally that offer master's-level or Doctor of Nursing Practice-level APRN programs²². In addition, the GNE SONs are systematically different than non-participating SONs. For example, the GNE SONs are affiliated with large academic hospitals. Further analysis of AACN data suggest that the GNE SONs had additional different characteristics than the non-GNE SONs, such as a higher number of faculty, and a higher likelihood of an existing NP specialty program at the beginning of the demonstration. Implementation of the demonstration across a larger number or a more diverse set of SONs might yield different results. As such, the findings may not be generalizable beyond those SONs that participated in the study.

In addition, the evaluation did not have access to qualitative or cost data from non-GNE SONs. As such, the evaluation is not able to assess specific demonstration processes, features, or cost-drivers that contribute to increased APRN student enrollment and graduations. Most importantly, the length of the demonstration project is insufficient to establish any long-term impact to Medicare program costs. The study was not able to follow APRN graduates' subsequent experience as providers of health care for Medicare and/or Medicaid beneficiaries. Therefore, the question of whether the demonstration costs were offset through reductions in the cost of delivering primary care or in the total Medicare beneficiary cost of care could not be answered in the time period covered by the evaluation.

²² AACN (2015). APRN Clinical Task Force White Paper. <http://www.aacn.nche.edu/APRN-White-Paper.pdf>

Conclusion

The GNE demonstration project attempted to mitigate some of the challenges to promoting growth in APRNs by increasing the opportunities for clinical education sites and preceptors, by providing payments to five participating hospitals for costs attributable to the qualified clinical education training for incremental APRN students. More importantly, the demonstration emphasized efforts focused on increasing the number of APRN students trained to practice in community-based care settings.

Results of the quantitative impact evaluation reported here suggest that the demonstration project may be associated with an overall increase in APRN student enrollment and graduations. While the enrollment and graduations did increase as intended, it should be noted that the demonstration SONs had already begun to increase enrollment prior to the start of the demonstration.

Results of the qualitative analysis using data from interviews and focus groups suggest that the GNE demonstration project succeeded in strengthening the ability of the GNE SONs to identify, recruit, and manage opportunities for APRN students to receive clinical education training in community-based settings. This included the centralization and greater coordination of student placements at clinical sites and with clinical preceptors.

Results also indicate that the GNE SONs and the APRN students will continue to benefit from the partner collaboration and clinical placement processes after the demonstration project ends. However, networks reported concerns regarding sustainability of other demonstration project efforts. Findings suggest that the increased student enrollments and the expanded pool of preceptors and clinical sites may be difficult to sustain without the ability to offer payments or compensation.

Prior to the GNE section 5509 mandate, Medicare title XVIII funds could not be used for the clinical education training of APRN students. Although CMS paid awardee hospitals to support preceptorships and clinical education for medical residents, there is no established mechanism under current law for Medicare to support similar payments to hospitals for APRN students. The GNE demonstration represents an innovative project that allowed the opportunity to contribute to the clinical education training of APRN students.

A final evaluation report including findings for the complete 6-year demonstration experience will be available in the fall of 2019.