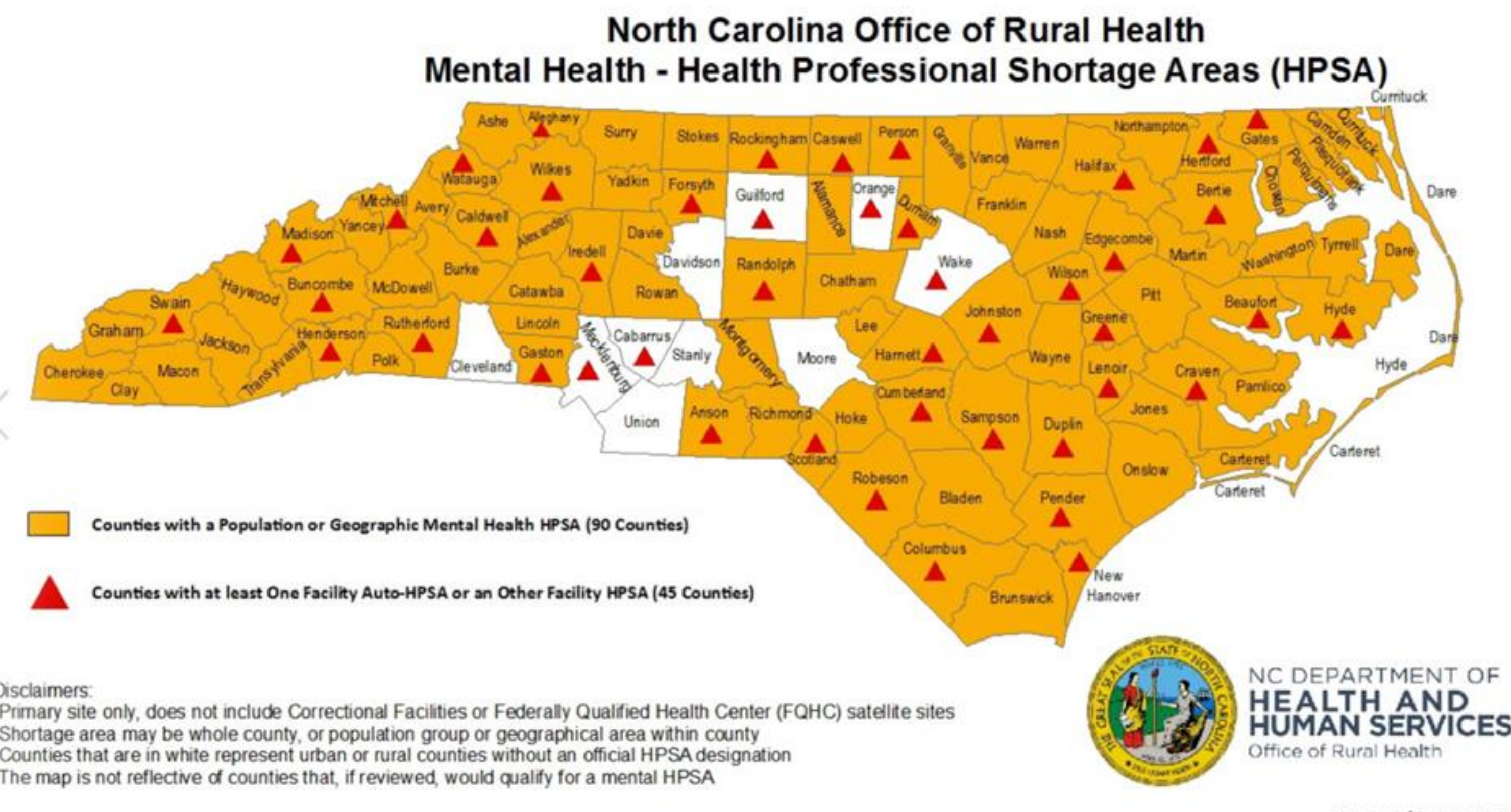




# USE OF TELEPSYCHIATRY TO IMPROVE MENTAL HEALTH ACCESS FOR RURAL POPULATION

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## BACKGROUND

Department of health in rural communities report a greater problem with access to specialists for rural residents than for their urban counterparts (1,2). This is particularly true for North Carolina given 90 of the 100 counties in North Carolina are designated health professional shortness areas in mental health. Lack of mental health services leads to under treatment, poor outcome such as high rates of suicide and homicide and increased use of emergency services, hospitalizations and placement in mental health institutions (3, 4).

In North Carolina alone 31 out of 100 counties have no psychiatrist and 63 counties have less than 1.9 psychiatrists per 10,000 people. The number of counties without any active behavior health provider currently stands at 13 and 35 counties have less than 1 per 10,000 behavioral health providers. According to federal guidelines, 90 counties in North Carolina qualify as Health Professional Shortage Areas.

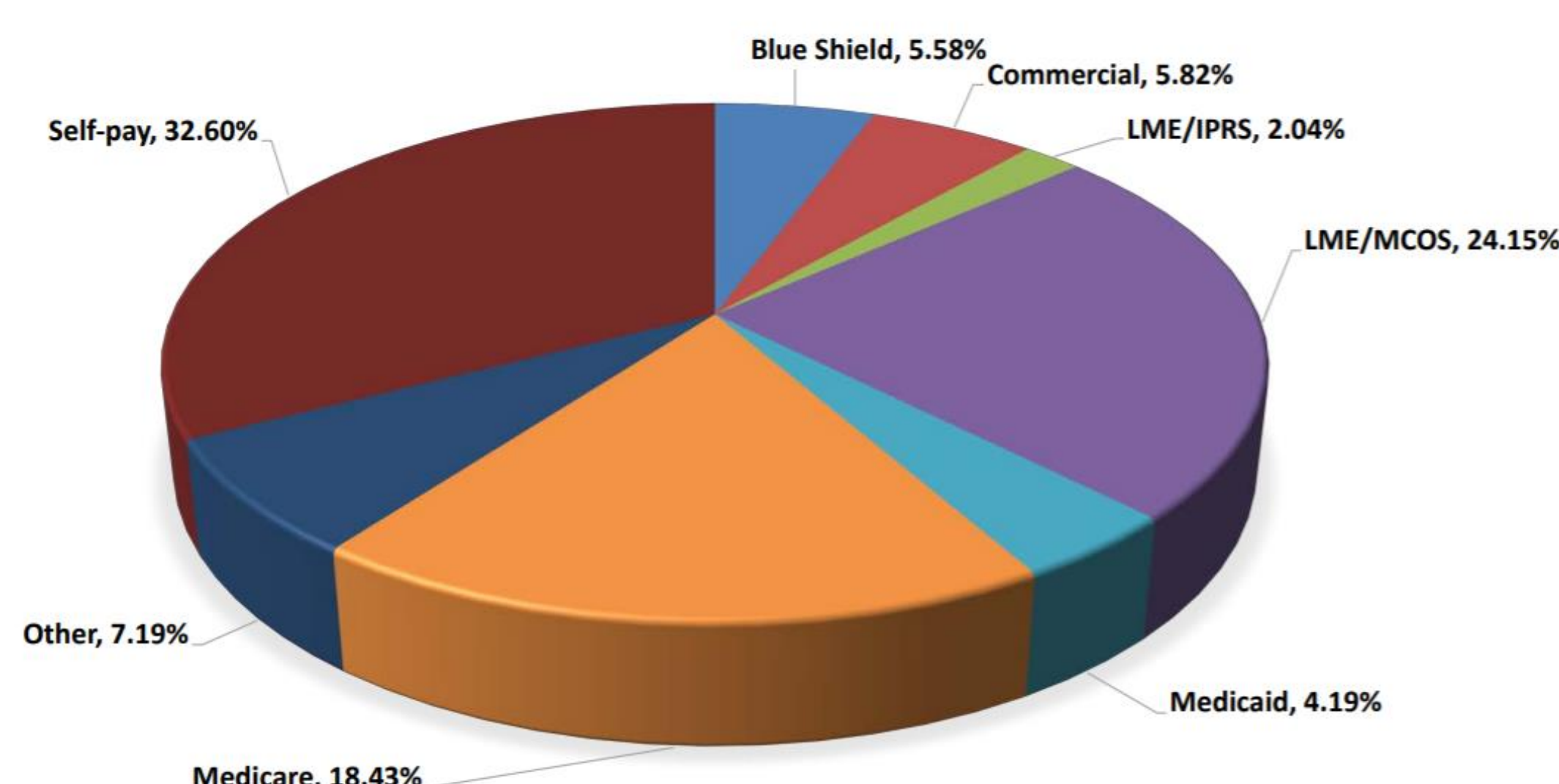
North Carolina has seen high emergency department admissions related to behavioral health issues and extended length of stays, ranging from long hours to multiple days (5). In 2013, NC hospitals had 162,000 behavioral health emergency visits (6). In 2010 patients with mental illness made up 10 percent of all emergency room visits in North Carolina, and people with mental health disorders were admitted to the hospital at twice the rate of those without (7).

## MATERIALS & METHODS

The North Carolina Statewide Telepsychiatry Program (NC-STeP) was developed in response to the critical need discussed above. NC-STeP connects hospital emergency departments across the state of North Carolina to provide psychiatric assessments and consultations to patients which is linked by using telemedicine technologies. Currently 57 hospital emergency departments in North Carolina are enrolled in the network with 53 live. Most of these emergency departments are in rural underserved areas that have limited if any access to a psychiatrist. By utilizing telemedicine technology NC-STeP can provide services to these emergency departments.

NC-STeP was facilitated by NC Session Law 2013-360 which was recodified as G.S. 143B-139 in 2018 which expanded the scope of NC-STeP to community-based settings. Currently, there 8 such community-based sites across the state and this number is growing rapidly with NC-STeP's goal being to get to 20 such sites in next three years. NC-STeP is based at East Carolina University Center for Telepsychiatry and E-Behavioral Health

**NC-STeP Charge Mix – Project to Date**  
Service Dates: October 1, 2013 – September 30, 2019

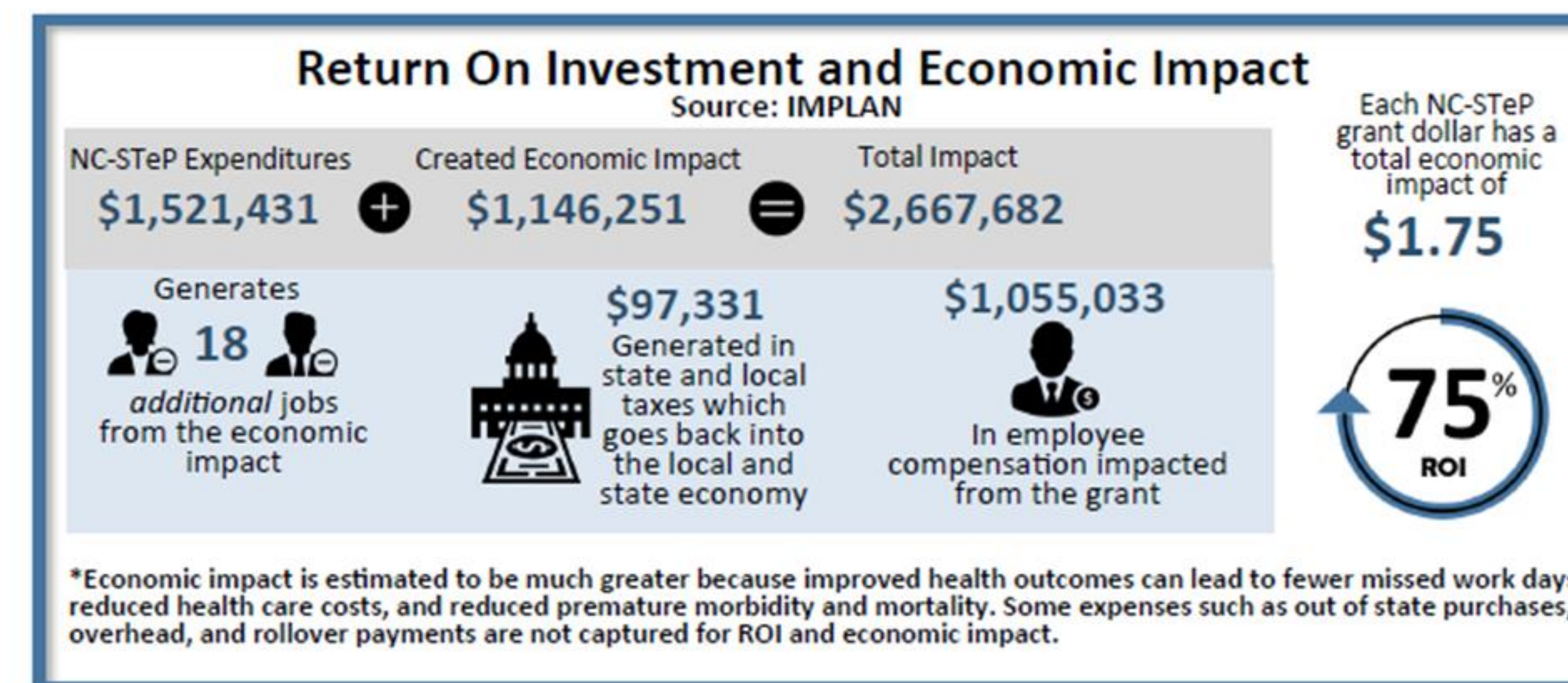


## RESULTS

As of June 2019, the program has provided 38,383 total psychiatry assessment to patients who otherwise would have gone without care. Of note, about a third of these patients had no insurance. The program is now also providing access to psychiatric care in rural communities at 8 sites. The program has developed a web portal to link different electronic health records. Of note, no such solutions existed to solve this problem until the solution developed by NC-STeP. Starting in 2013 NC-STeP set out to build a network with hospital emergency departments in need of behavioral health resources using funds appropriated by the NC General Assembly. NC-STeP began the education and implementation to stakeholders in emergency departments across the state. NC-STeP provided the telemedicine equipment, installation, education and implementation of each hospital emergency department in our network. This work is still on going as new hospital emergency departments enroll in our program.

NC-STeP utilizes a network of eight Clinical Provider Hubs with 54 consultant providers located across the state to provide service to our 57 partner hospitals across North Carolina. These hubs serve a geographic region within the state which enables them to understand behavioral health resources available in the region of the hospital(s) they are serving. The network hubs provide an on-demand service (often referred to as the fire house model) seven days a week from 8am-6pm. Since the inception of NC-STeP to June 2019 a total of 38,383 psychiatry assessment has been performed and 5,195 IVCs have been overturned across the state of North Carolina. The cumulative return on investment since the beginning of our program is \$28,053,000 (data reported as of June 30, 2019). This number is based on the savings from preventing unnecessary hospitalizations. This dollar amount does not include other ancillary savings that are more difficult to measure. Over 32% of the patients served by NC-STeP had no insurance when presenting at the emergency department.

The average length of stay for patients being presented for NC-STeP consults has been reduced dramatically. Average consult elapsed time once the patient is placed (in queue to exam time) was 3 hours and 13 minutes.



### Importance

There are 84 counties in NC that are classified as Mental Health Professional Shortage Areas (an increase from 35 in SFY 2017). Though not designated, there are additional counties that have a very low supply of mental health professionals in proportion to the population.

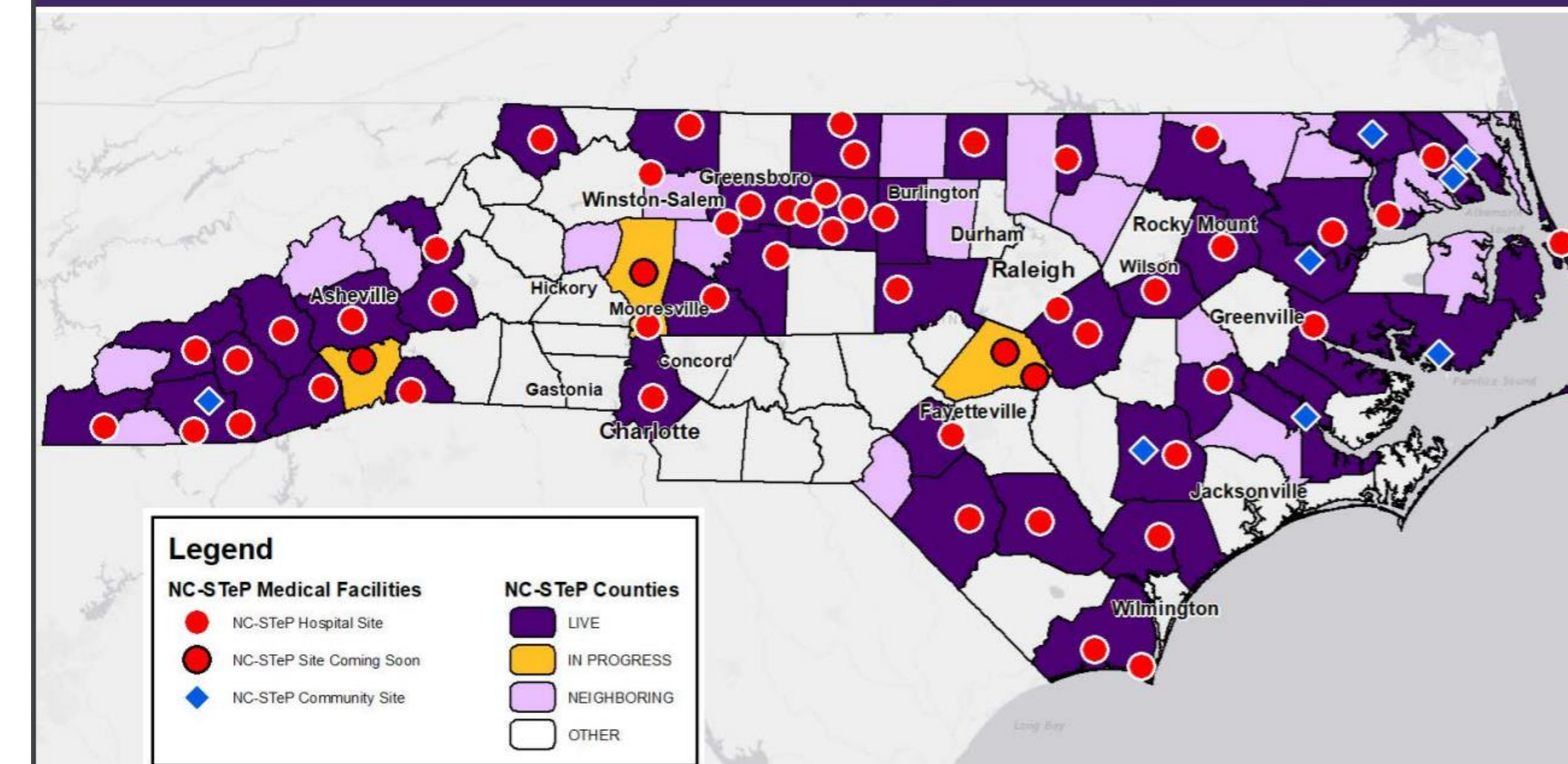
This use of technology can reduce patients' length of stay in the emergency department (which can last for days in some cases) and overturn unnecessary involuntary commitments (IVCs), thereby reducing the burden on staff and reducing costs to the state and federal governments, as well as the private sector.



## CONCLUSION

NC-STeP has provided over 38,000 assessments to patients, a third of whom had no insurance coverage. Patients receive evidence-based care closer to home that results in reduced distress/disability, functional improvement, enhanced quality of life, and gainful employment. As a result, communities are likely to get better "citizenship", reduced homelessness, crime reduction, more self-reliance, etc. With expanding infrastructure and provider volume, NC-STeP has the potential to bridge the gap in mental health care in North Carolina.

## NC-STeP Status as of September 30, 2019



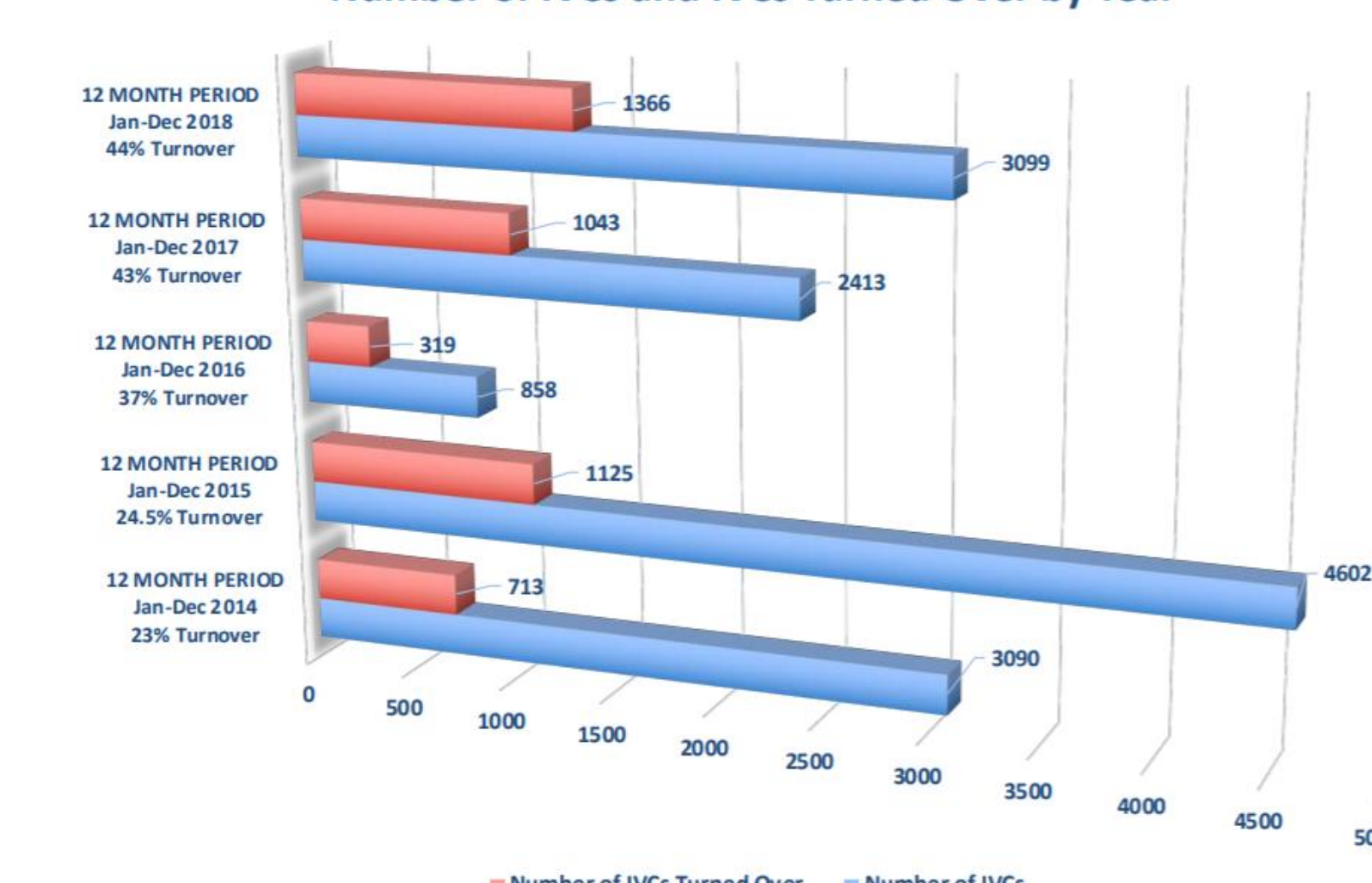
## DISCUSSION

Rural populations are at significant disadvantage than their urban counter parts in accessing specialty care especially mental healthcare in North Carolina, calling for an urgent need for innovative methods to deliver mental health services. Tele psychiatry bring the promise of much-needed specialty expertise to those in under served and difficult to reach settings. Tele psychiatry can be used to provide a variety of services including diagnostic evaluations, medication management, therapy and patient education. Systematic review done by Isabel Reinhardt identified that (a) the validity of assessments and clinical interaction with the tele psychiatry is comparable to that of face-to-face care, (b) correlated with the reduction in the length of stay and reduction of the number of hospital admissions, (c) cost effective, and (d) patient's and professionals have a positive attitude towards the technology and showing a high level of satisfaction with tele psychiatry (8). Narasimhan et al. evaluated the implementation of a statewide tele psychiatry program which was implemented in 2009 in 18 non psychiatric rural and urban emergency department in a control group design. The authors reported a decrease of the length of stay from 1.35 to 0.43 days and drop in admissions from 22 to 11% and a raise of follow-up rates of 46 from 16% compared with matched controls (9). Even though Tele psychiatry has immense benefit, it is underutilized. Hoffman and Kane surveyed 183 residence programs in the USA and found less than half of the programs were involving tele psychiatry (10).

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**Number of IVCs and IVCs Turned Over by Year**



**Average Consult Elapsed Time In Queue to Exam Complete (3 hrs. 9 min.)**

