



# Modeling the Regional Nursing Workforce in Northeast Ohio

# Is a Shortage of Nurses Likely in Northeast Ohio?

- Time Frame is 2010 through 2020
- Estimated Annual Demand for nurses
- Estimated Annual Supply of nurses
- Shortage = Demand – Supply
- A nursing shortage has economic as well as quality of healthcare consequences

# [ What Drives Demand? ]

The size of the population served

The age and gender of the population

The proportion of urban population

The disposable income of the population

The cost of medical care for the patient

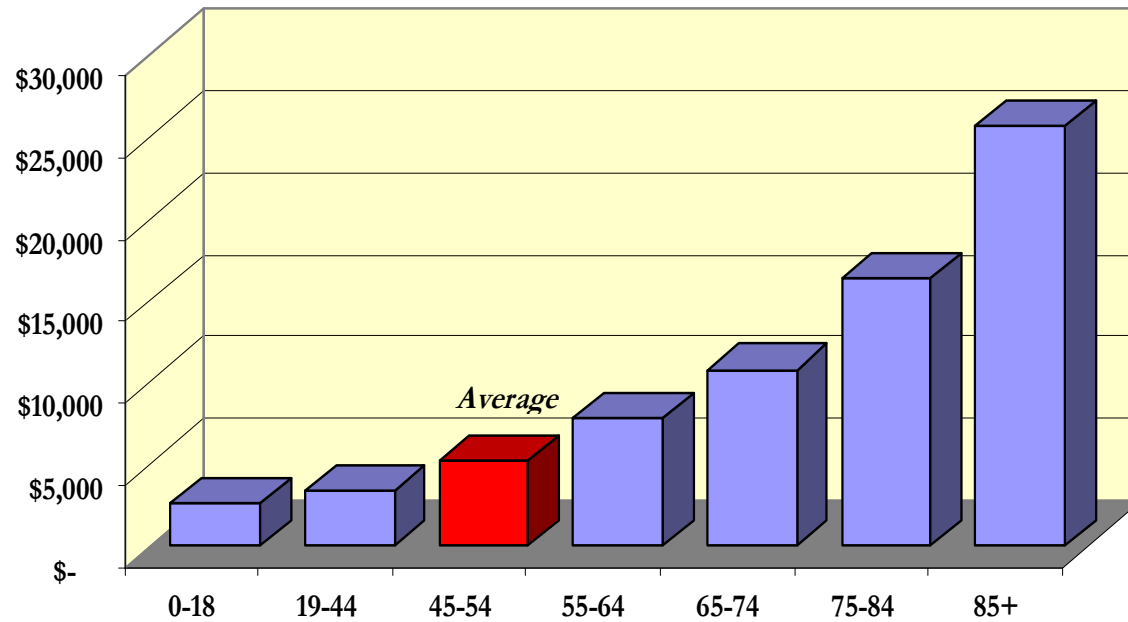
The opportunities for treatment available  
in the region

# Demographics

- The existing models are based on population estimates of each county in the region by age and gender from the Ohio 2010 Census figures
- Age groups are 0 to 4, 5 to 14, 15 to 19, 20 to 24, 25 to 44, 45 to 64, 65 to 74, 75 to 84, 85+
- Counties are grouped as “urban” and “suburban”
- Urban populations tend to consume more medical services given a lower average income and other characteristics

# [ Healthcare Costs and Age ]

U.S. Per Capita Healthcare Expenditures



# Modeling Demand

- Demand for **HEALTHCARE** in major care setting
  - Age and Gender distribution of population over time
  - Urban versus Non-Urban
- Demand for **NURSING**
  - FTE nurses needed to meet each healthcare category – “intensity factors”

## Healthcare Settings

- ▶ Hospital in-patient
- ▶ Emergency Visits
- ▶ Ambulatory Care
- ▶ Nursing Facilities
- ▶ Home Health
- ▶ Public Health
- ▶ Nurse Education
- ▶ Other

# [ Intensity Factors ]

- The number of nurses needed per unit of care in each healthcare setting
- They are based on surveys of various types of health care organizations both at the national and regional level
- The estimated number of units of care times the intensity factor equals FTE nurses demanded

# [ Exporting Medical Services ]

- In addition to serving the people of Northeast Ohio, the region serves patients from other places
- These export sales support income and jobs in the regional economy
- But, how large are they? How important to the regional economy?

# [ Estimating Export Sales ]

- Compare this region to others that are about the same population, but are not nationally known centers of healthcare
- San Antonio, Orlando and Cincinnati are ranked just above the Cleveland SMSA in population
- Kansas City, San Jose and Columbus are ranked just below Cleveland

# Comparison in Healthcare

*Comparison of Metropolitan Statistical Areas*

<u>Region</u>	<u>Receipts (billions)</u>	<u>Payroll (billions)</u>	<u>Employment</u>
San Antonio	10.6	3.9	110,000
Orlando	9.8	3.9	93,000
Cincinnati	12.0	5.0	129,500
Cleveland	15.0	6.5	159,800
Kansas City	11.6	4.7	116,850
San Jose	12.4	4.7	89,000
Columbus	10.2	4.3	107,650

# [ Cleveland Stands Out ]

- Regions of this size typically have annual healthcare sales of \$10 billion and employs about 110,000 people with an annual payroll of about \$4 billion
- Cleveland has healthcare sales that are 50% greater and its annual payroll is also 50% higher than what one would expect!
- About 1/3 of Healthcare revenues generated in Cleveland come from export sales!

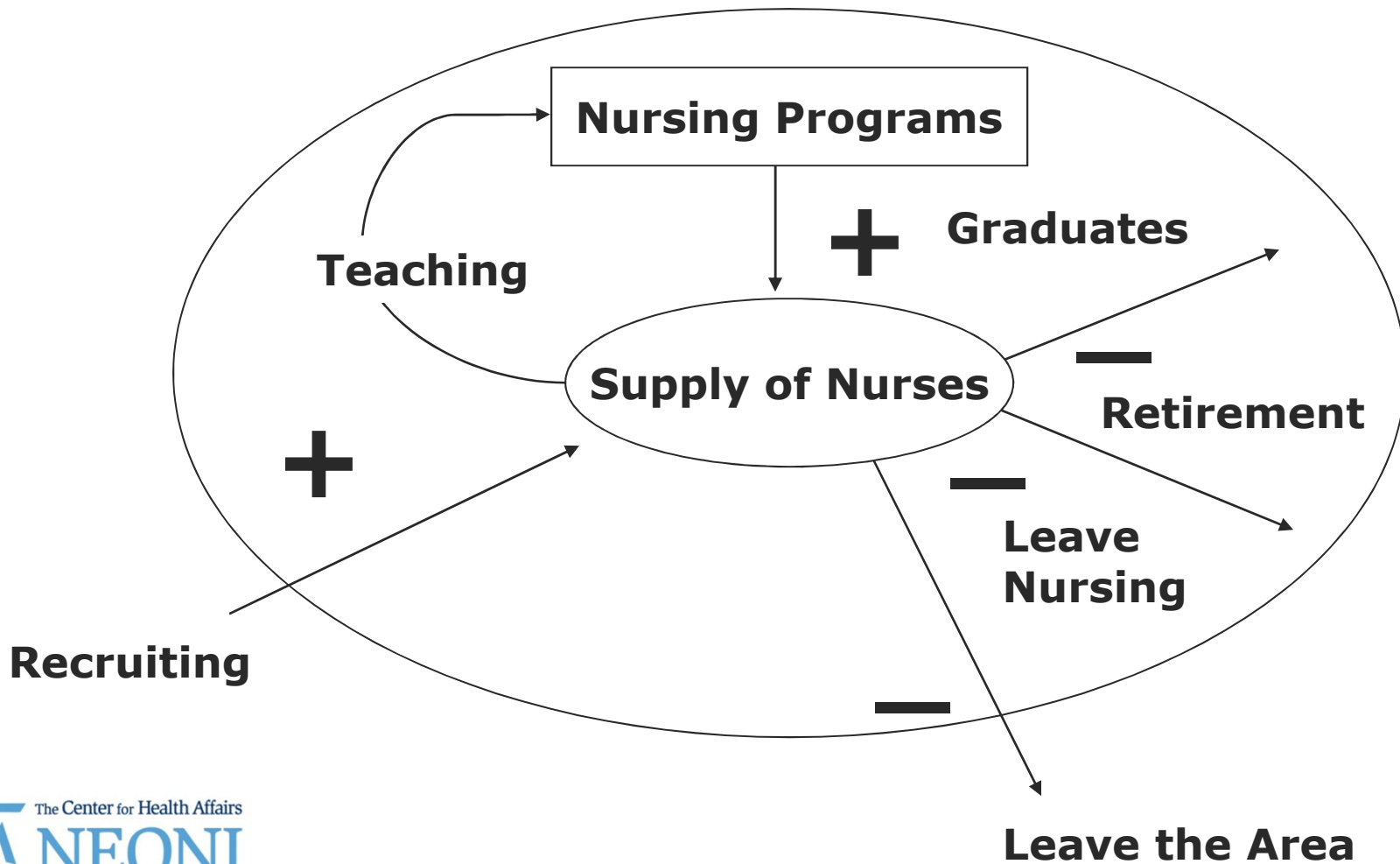
# [ How Does This Affect Nursing ]

- There are about 8,200 more RN's employed in the region today than are needed to care for just the region's residents
- If Healthcare export sales grow, even more RN's will be required over the next decade
- With only a modest growth in export sales and a modest economic recovery, the number of RN's may be 50% greater by 2020

# Where Will They Come From?

- Supply is based on the existing number of nurses using Board of Registration data
- The age distribution of licensed nurses is estimated based on year first licensed
- The hours worked is adjusted by the age distribution of the nursing labor force and includes retirements

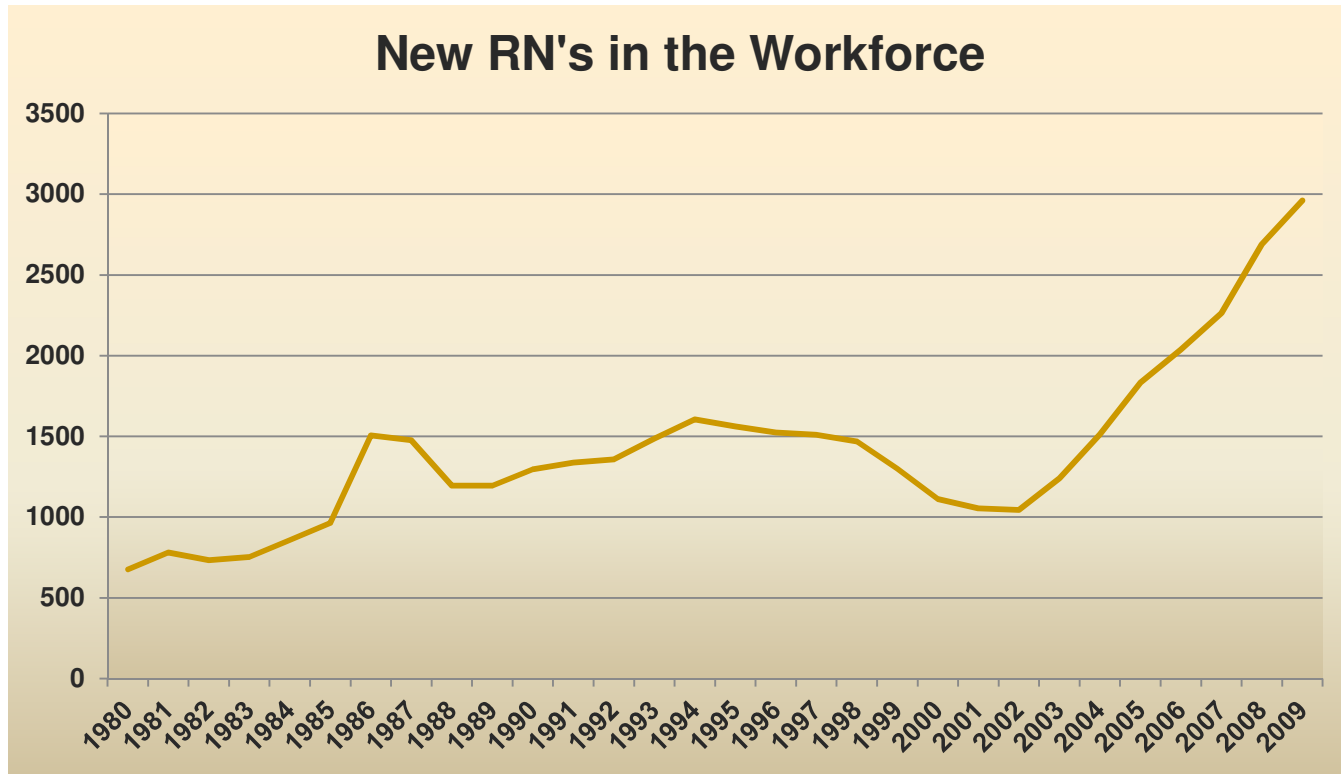
# [ Supply Model Concept ]



# Modeling Supply

- Projections also utilize survey data:
  - Data on graduation and licensure
  - Number of nurses recruited into the region
  - Number of nurses leaving the region
  - Number of nurses leaving the profession to pursue other jobs or occupations

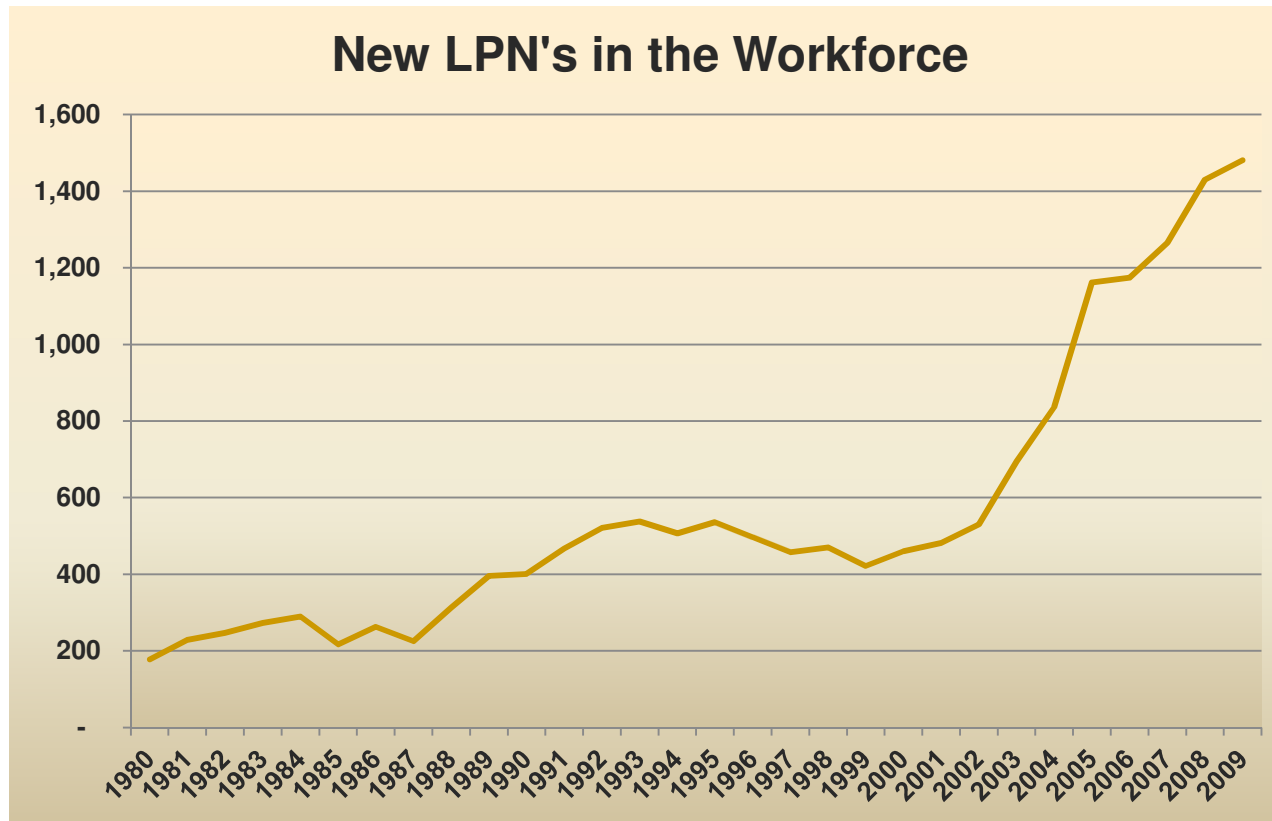
# [ Licensing Trends ]



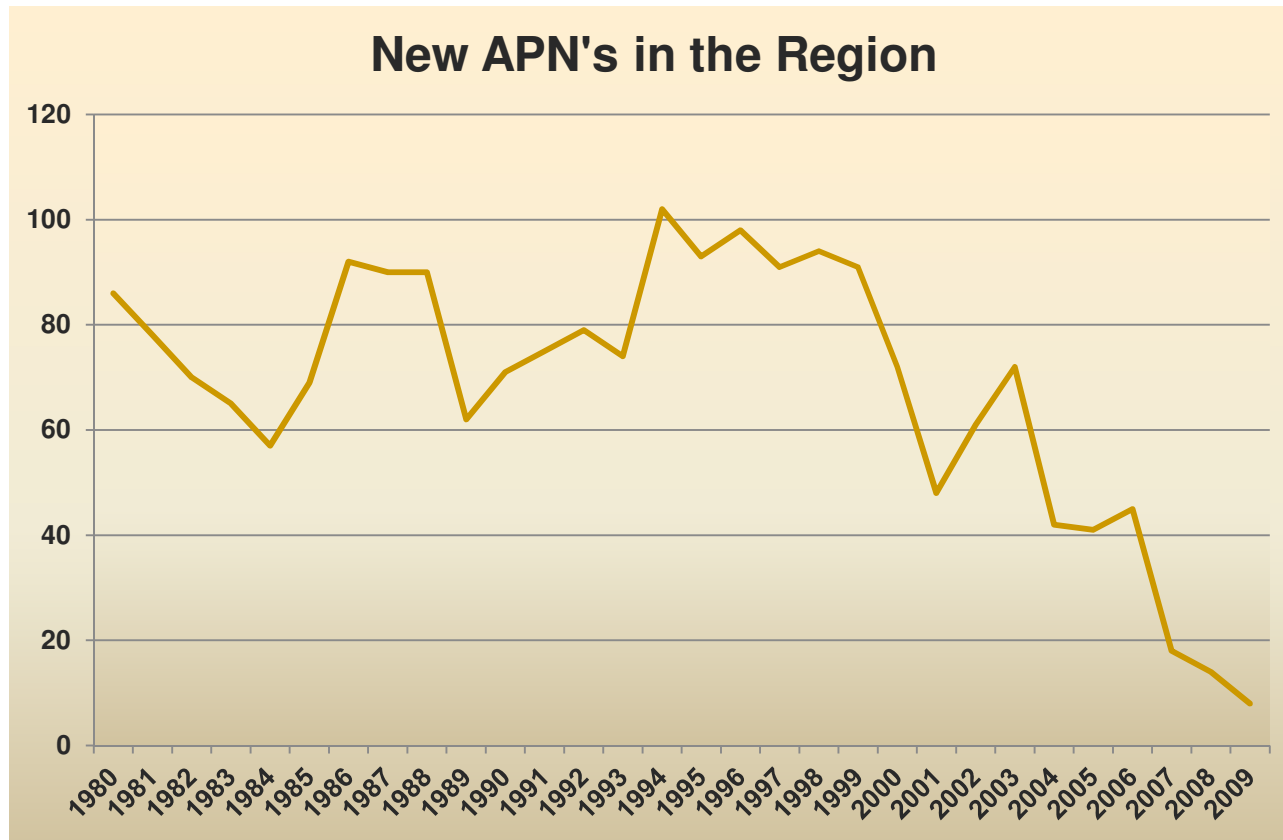
# Regional Graduates and Recruits From Outside

	2007-08	2008-09	2009-10
<b>RN Graduates</b>	1,264	1,501	1,910
<b>RN's Licensed</b>	2,264	2,690	2,962
<b>Recruited</b>	1,000	1,189	1,052

# Trend in LPN Licenses



# Trend in APN Licenses



## [ Current Regional Supply of RN's ]

- 56,000 licensed RN's, 5,000 from living outside the region – 41,813 FTE's
- Average age – about 47 years old
- Number of new licensed nurses entering the workforce is about 1,300 typically
- Number that leave the workforce in the first 3 years is about 5% their second year and 10% the third year

## [ Current Regional Supply of LPN's ]

- 14,085 licensed LPN's in the region
- Average age about 45 years old
- Average number entering the workforce each year is about 400
- Number leaving the workforce in the first 3 years is negligible
- About 45% work in Long-term care

# What Have We Learned?

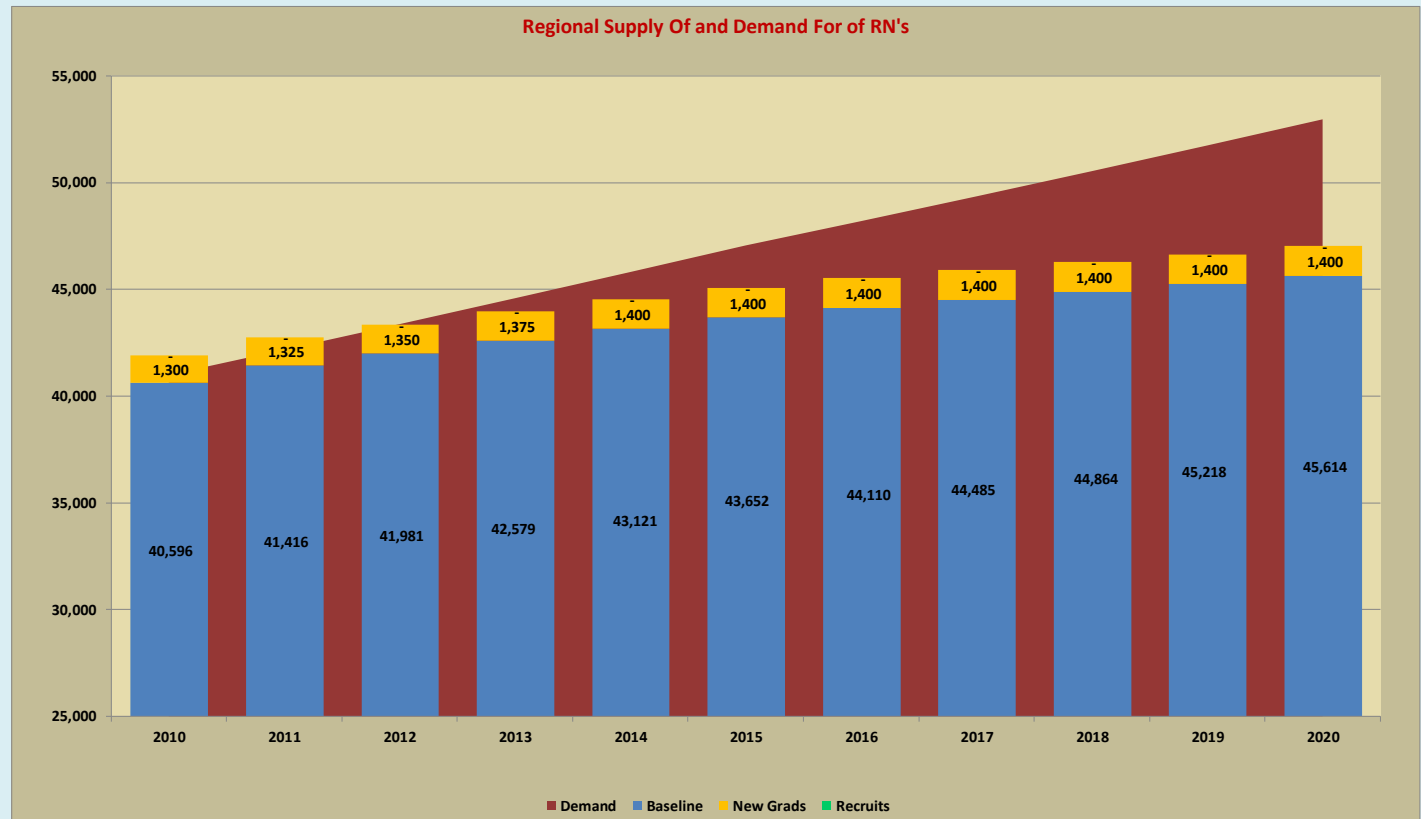
- By late 2012 what has been a modest surplus of RN's will dry up
- As the population ages more nurses will retire and reduce hours
- The demand will rise dramatically as the post war boomers enter get older
- By 2015 we will face a shortage of about 2,000 FTE's for RN's and 4,000 by 2020 (assuming exports remain at the current levels)

# [ Proactive Planning is Needed ]

- The model is a tool that can help evaluate various approaches to dealing with this growing shortage
- The model will accommodate changes that take place and provide updated figures
- Additional models of other critical healthcare professions would assist policy makers
- A system to monitor the changing nature of long-term care facilities would be helpful

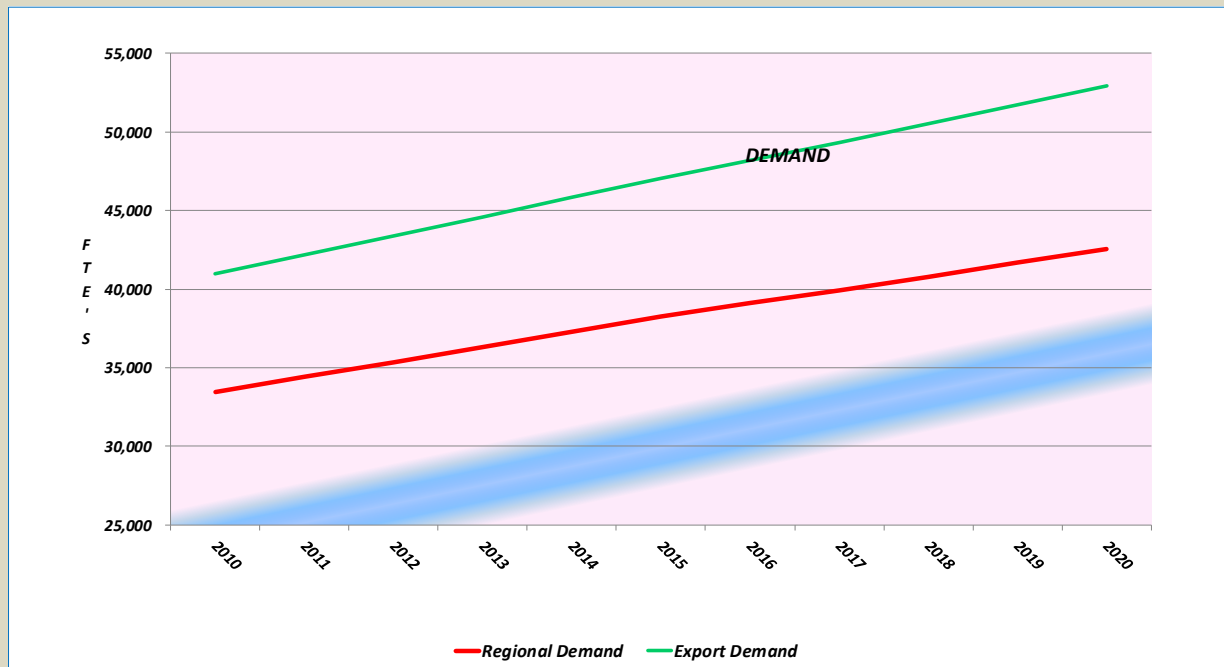
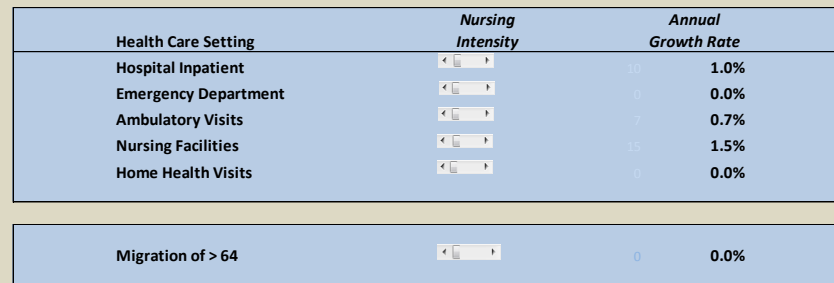
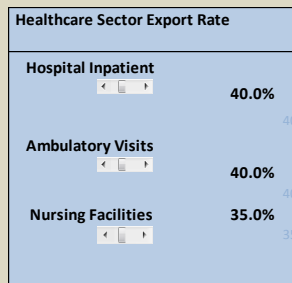
# Supply for RNs in Northeast Ohio

Supply Flows	Projected											
	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	
Change in FTE RN's Adjusted for Age	40,596	41,416	41,981	42,579	43,121	43,652	44,110	44,485	44,864	45,218	45,614	
Newly Licensed RN's Taking First Job in Northeast Ohio	1,300	1,325	1,350	1,375	1,400	1,400	1,400	1,400	1,400	1,400	1,400	
Nurses Recruited Into the Region From Out of State	-	-	-	-	-	-	-	-	-	-	-	
<b>Regional Supply</b>	<b>41,896</b>	<b>42,741</b>	<b>43,331</b>	<b>43,954</b>	<b>44,521</b>	<b>45,052</b>	<b>45,510</b>	<b>45,885</b>	<b>46,264</b>	<b>46,618</b>	<b>47,014</b>	
Added Grads	< >	< >	< >	< >	< >	< >	< >	< >	< >	< >	< >	
Added Recruits	< >	< >	< >	< >	< >	< >	< >	< >	< >	< >	< >	
<b>Demand</b>	<b>40,994</b>	<b>42,175</b>	<b>43,372</b>	<b>44,584</b>	<b>45,813</b>	<b>47,058</b>	<b>48,197</b>	<b>49,356</b>	<b>50,537</b>	<b>51,740</b>	<b>52,965</b>	
<b>GAP</b>	<b>(902)</b>	<b>(566)</b>	<b>40</b>	<b>630</b>	<b>1,292</b>	<b>2,006</b>	<b>2,687</b>	<b>3,472</b>	<b>4,273</b>	<b>5,122</b>	<b>5,951</b>	



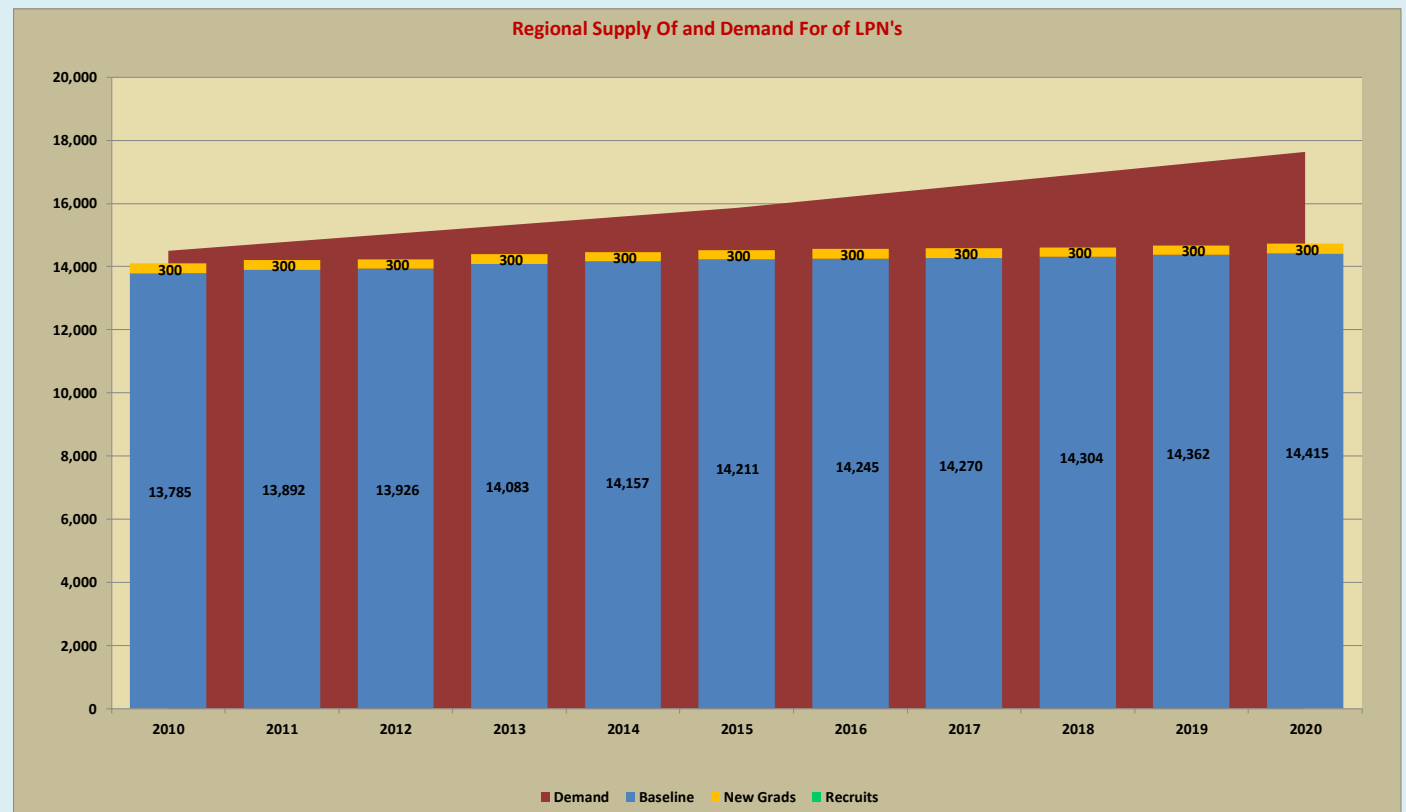
# Demand for RNs in Northeast Ohio

Health Care Setting	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
<b>Hospital Inpatient - Regional</b>	13,528	13,956	14,392	14,834	15,284	15,742	16,330	16,928	17,537	18,156	18,786
Regional Exports	5,411	5,583	5,757	5,934	6,114	6,297	6,532	6,771	7,015	7,262	7,514
<b>Emergency Department</b>	1,430	1,461	1,491	1,521	1,552	1,582	1,578	1,573	1,569	1,565	1,560
<b>Ambulatory Visits - Regional</b>	1,914	1,968	2,022	2,077	2,133	2,189	2,223	2,257	2,291	2,326	2,361
Regional Exports	766	787	809	831	853	876	889	903	916	930	944
<b>Nursing Facilities</b>	3,841	3,984	4,130	4,279	4,432	4,589	4,779	4,974	5,174	5,378	5,588
Regional Exports	1,344	1,394	1,445	1,498	1,551	1,606	1,673	1,741	1,811	1,882	1,956
<b>Home Health Visits</b>	1,314	1,356	1,397	1,439	1,481	1,522	1,564	1,606	1,648	1,690	1,732
<b>Public Health</b>	2,614	2,681	2,748	2,815	2,882	2,949	2,941	2,933	2,926	2,918	2,911
<b>Nursing Education</b>	796	816	836	857	877	897	895	893	890	888	886
<b>Other</b>	6,024	6,178	6,333	6,487	6,641	6,795	6,777	6,760	6,742	6,725	6,707
<b>Regional Demand</b>	33,473	34,411	35,361	36,322	37,295	38,280	39,103	39,941	40,795	41,665	42,551
Total Regional Exports	7,521	7,764	8,011	8,262	8,518	8,779	9,094	9,415	9,742	10,075	10,415
<b>Total Demand for RN's</b>	40,994	42,175	43,372	44,584	45,813	47,058	48,197	49,356	50,537	51,740	52,965



# Supply for LPNs in Northeast Ohio

<i>Projected</i>											
Supply Flows	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Licensed LPN's Adjusted for Age (FTE's)	13,785	13,892	13,926	14,083	14,157	14,211	14,245	14,270	14,304	14,362	14,415
Newly Licensed LPN's Taking First Job in Northeast Ohio	300	300	300	300	300	300	300	300	300	300	300
LPN's Recruited Into the Region From Out of State	-	-	-	-	-	-	-	-	-	-	-
<b>Regional Supply</b>	<b>14,085</b>	<b>14,192</b>	<b>14,226</b>	<b>14,383</b>	<b>14,457</b>	<b>14,511</b>	<b>14,545</b>	<b>14,570</b>	<b>14,604</b>	<b>14,662</b>	<b>14,715</b>
Added Grads	< >	< >	< >	< >	< >	< >	< >	< >	< >	< >	< >
Added Recruits	< >	< >	< >	< >	< >	< >	< >	< >	< >	< >	< >
<b>Demand</b>	<b>14,502</b>	<b>14,774</b>	<b>15,046</b>	<b>15,318</b>	<b>15,590</b>	<b>15,862</b>	<b>16,217</b>	<b>16,571</b>	<b>16,926</b>	<b>17,281</b>	<b>17,636</b>
<b>GAP</b>	<b>417</b>	<b>582</b>	<b>820</b>	<b>935</b>	<b>1,133</b>	<b>1,350</b>	<b>1,671</b>	<b>2,001</b>	<b>2,322</b>	<b>2,619</b>	<b>2,921</b>



# Demand for LPNs in Northeast Ohio

Health Care Setting	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
<b>Hospital Inpatient - Regional</b>	1,701	1,737	1,774	1,810	1,846	1,883	1,934	1,985	2,036	2,087	2,138
Regional Exports	765	782	798	815	831	847	870	893	916	939	962
<b>Emergency Department</b>	39	40	41	41	42	43	43	43	43	43	43
<b>Ambulatory Visits - Regional</b>	239	244	249	254	259	264	266	269	271	273	275
Regional Exports	108	110	112	114	117	119	120	121	122	123	124
<b>Nursing Facilities</b>	6,482	6,623	6,764	6,906	7,047	7,188	7,376	7,563	7,751	7,938	8,125
Regional Exports	2,917	2,980	3,044	3,108	3,171	3,235	3,319	3,403	3,488	3,572	3,656
<b>Home Health Visits</b>	164	169	175	180	185	190	196	201	206	211	216
<b>Public Health</b>	13	13	13	13	13	13	13	13	13	13	13
<b>Nursing Education</b>	-	-	-	-	-	-	-	-	-	-	-
<b>Other</b>	64	64	64	64	64	64	64	64	64	63	63
<b>Regional Demand</b>	<b>10,712</b>	<b>10,902</b>	<b>11,091</b>	<b>11,281</b>	<b>11,471</b>	<b>11,661</b>	<b>11,907</b>	<b>12,154</b>	<b>12,400</b>	<b>12,647</b>	<b>12,894</b>
<b>Total Regional Exports</b>	<b>3,790</b>	<b>3,872</b>	<b>3,954</b>	<b>4,037</b>	<b>4,119</b>	<b>4,201</b>	<b>4,309</b>	<b>4,418</b>	<b>4,526</b>	<b>4,634</b>	<b>4,742</b>
<b>Total Demand for LPN's</b>	<b>14,502</b>	<b>14,774</b>	<b>15,046</b>	<b>15,318</b>	<b>15,590</b>	<b>15,862</b>	<b>16,217</b>	<b>16,571</b>	<b>16,926</b>	<b>17,281</b>	<b>17,636</b>

Healthcare Sector Export Rate	
Hospital Inpatient	45.0%
Ambulatory Visits	45.0%
Nursing Facilities	45.0%

Health Care Setting	Nursing Intensity	Annual Growth Rate
Hospital Inpatient	0	0.0%
Emergency Department	0	0.0%
Ambulatory Visits	0	0.0%
Nursing Facilities	0	0.0%
Home Health Visits	0	0.0%
Migration of > 64	0	0.0%

