



Nebraska
Center
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Health
Research

Current Issues and New Approaches:
The EMS Survey in Nebraska

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EXECUTIVE SUMMARY

Findings

1. *Use of 911:* 96% of all providers in Nebraska use 911; the lowest reported use was in the Northeast region—89%. This is an increase from findings generated by a 1995 survey, which showed only 78% of services in Region 6 (overlaps Northeast) used 911.
2. *Use of enhanced 911:* 70% of the systems with 911 had enhanced 911, with three regions including more than 40% of respondents without it: South Central, 41% without; North Central, 51% without; and Northeast, 42% without. (A map of the regions is appended; see Appendix A). In the 1995 survey, the range among the six health planning regions was from no access in Region 4 (overlaps North Central), to 39% access in Region 2 (overlaps South Central and Western), to 94% in Region 7.
3. *Replies to question: What do you think your EMS service needs are?*

Additional personnel	58%
Recruitment program	54%
Volunteers	49%
Retention program	47%
Education program	45.5%
4. *Paid personnel:* Only 45 of 316 providers reported having paid personnel. Of those, 21 had 10 or fewer paid personnel.
5. *Level of personnel:* Nearly all, 298 of 333, reporting agencies use EMT-Basics, an increase from 74.5% in 1995. Other levels have also increased, paramedics from 12.5% to 17%, and first responders from 11.4% to 38%.
6. *Age of ambulances:* Thirty agencies reported that their ambulances were 20 years old or older.
7. *Rating patient care:* Using a scale of poor, fair, good, very good, or excellent, 84% of 332 responding agencies rated care as very good or excellent.
8. *Response time:* More than 90% of agencies (N = 320) reported responding to the scene in 10 minutes or less (on average), with fewer than 3% needing more than 15 minutes. More than 90% reported traveling less than 9 miles to reach the scene, and fewer than 2% traveled 20 or more miles.
9. *Billing for services:* Approximately 40% of agencies do not bill for their services. In the Southeast region only 45% of agencies bill.

10. *Recruitment programs:* More than $\frac{2}{3}$ of the agencies do not have an active recruitment program.
11. *Reasons personnel resign:* The most frequent reason for resigning was moving, for 39% of the agencies. Other reasons were time (31%), full-time job (27%), and family (26%).
12. *Recognition of volunteers:* Nearly $\frac{2}{3}$ of agencies provide a form of recognition for their volunteers.
13. *Local support for training:* Nearly $\frac{4}{5}$ of agencies reported having local support for training: 66.1% for both continuing education and basic training, 7.5% for continuing education only, and 5.8% for basic training only.

Recommendations

1. Communications involving dispatchers should be improved. Doing so will require training dispatchers and maintaining a cadre of trained dispatchers. The state should consider investing in a system of regional dispatch agencies with trained personnel who use mapping software to place the scene of a call. Instructions to responding units should include location, directions, and medically approved pre-arrival instructions to callers (currently used in interactions with only 40.6% of agencies). Dispatching centers should include persons trained to converse with the caller while the responders are en route. The following communications from dispatchers warrant improvement:
 - to responding units, providing better information about the location and better information about the medical problem on the scene;
 - to the caller, providing better medical information, following protocols approved by the medical director of the service.
2. Improvements can be made in reporting patient care information en route to the hospital (17% of agencies do not always report en route).
3. The state should assess the geographic coverage of the state by EMTs with advanced training (only 17% of agencies use EMT-Ps and 15% use EMT-Is).
4. EMS agencies in Nebraska should increase their use of billing to generate revenues to support their services. A logical starting point might be billing Medicare for the costs of drugs and/or supplies (only 47% do so now).
5. Distance learning programs in continuing education should be developed and implemented, targeted to the needs of EMS providers. More than half of the agencies in the North Central, Northeast, and Southeast regions reported that distance learning would help in recruiting basic EMT or first responder personnel. Currently, 33% of the agencies report using distance learning, but 83% indicate they would.

6. The state should assist in small group discussions of the training and testing requirements involved in being a volunteer EMT. There were numerous complaints about the burden of training and testing. By providing the reasoning for those requirements, the state can help match the burden to the need for quality assurance.
7. The state should consider working with agencies who want to become more advanced in the level of service provided; a majority indicated a desire to do so.
8. EMS agencies should implement public awareness and education efforts that portray emergency medical services as clinical/medical activities. There continues to be a perception that the services are for transport only.
9. EMS agencies should develop systematic assessments of quality of care, beginning with standardized community surveys.

INTRODUCTION

Purpose

This report is intended to help the state of Nebraska sustain the current level of emergency medical services (EMS) available in rural communities and to provide suggestions for improvements in the system currently in place to deliver services. Consistent with the goals of the State Rural Hospital Flexibility Grant Program, strengthening the infrastructure that provides EMS in rural communities is critical to the future of trauma and acute care medical services in rural Nebraska.

Methods

EMS providers in Nebraska were surveyed during the spring and early summer of 2001. The survey instrument solicited information and suggestions related to:

- the organization of services,
- personnel employed,
- equipment used in providing services,
- services provided,
- funding for service providers,
- recruitment and retention of individuals to provide the services,
- community recognition for EMS volunteers, and
- education and training of EMS workers.

General suggestions for improving EMS services were solicited in a closing question. Responses were obtained from 345 of Nebraska's 425 EMS providers.¹

Focus group discussions were held during August and September in three regions with emergency medical technicians, supervisors, trainers, and medical directors. The discussions took place in Kearney, Scottsbluff, and Lincoln, Nebraska. Responses to the survey were discussed, serving as background to more general discussions of the future of EMS in Nebraska. Comments from the focus group discussions were used to formulate the interpretations offered in this report.

¹The modified Dillman method was employed to maximize the return rate, which includes the following steps: 1) initial mailing; 2) second mailing; 3) reminder card; and 4) reminder card. Some respondents called with questions, which were answered by the research team.

Results

This report parallels the sections of the survey instrument, reporting the frequencies of responses, summarizing written responses, and, where appropriate, providing correlations between responses. Suggestions are made for actions the state, or local providers, may want to consider. The data contained in this report should inform decision makers concerning organization of services, personnel issues in staffing EMS, and potential for investments to improve service delivery. Not all questions used in the survey are encompassed within the text of this report. A copy of the survey instrument is appended (see Appendix B), and answers to all questions are available on request.

ORGANIZATION OF THE SYSTEM

The survey was sent to all EMS providers in the state, so the range in type and size reflects the range in the state from the smallest of rural providers to the large providers in metropolitan areas. Results of the survey can be tabulated by region; Table 1 shows the number of returns, providers, and percent returns for each region.

Table 1
Returns by Region

<u>Region</u>	<u>Number of Providers</u>	<u>Returns</u>	<u>Percent</u>
Western	50	40	80.0
South Central	70	60	85.7
North Central	58	49	84.5
Northeast	91	77	84.6
Southeast	117	92	78.6
Metro	39	27	69.2
Total	425	345	81.2

Most of the providers are transporting services, although 15% are not. Non-transporting services are most common in the Southeast (24%), the South Central (19%), and the Metro (19%) regions. Only 19 of the 345 respondents were the sole provider in their county, and 10 of those are in the West region (four are in the North Central region). Almost $\frac{2}{3}$ of EMS providers report being in the same organization as the fire department; in only two regions do more than 40% of providers report being in a separate organization (Northeast and Southeast).

Nearly all providers (96%) reported using a 911 system, but approximately 11% of the providers in Northeast Nebraska reported not having 911. Of those with 911 systems, 70% reported having an enhanced system. Regions in which more than 40% of respondents reported not having enhanced 911 include:

- South Central 41% (23 of 56)
- North Central 51% (23 of 45)
- Northeast 42% (27 of 65)

Having an enhanced 911 system in place does not assure emergency responders will be given useful information about where the victim is located. In one of the focus groups, an example was given wherein a dispatcher, based on enhanced 911, provided an address totally unfamiliar to the responder. In that instance, providing the caller's name would have been sufficient information for the EMS unit to know the location. In another part of the state, basic 911 service

was not available, so a regional dispatch service may not get all of the calls from sites where emergencies occur.

A vast majority of calls handled by EMS providers are responses to emergencies (75% for the state), with the range across regions being from 62% in the Western region to 84% in the Metro region. The percentage of calls devoted to inter-facility non-emergency transfers, calls that might be affected by the increased number of Critical Access Hospitals in Nebraska,² is below 9%, with only the North Central region providers reporting a percentage, 13.2%, appreciably above the state aggregate.

Responses to questions about instructions provided by dispatchers reveal an area for potential improvement.

Pre-Arrival, Medically Approved Instructions From The Dispatcher To Callers

Dispatchers provided medically approved instructions in fewer than 50% of calls. The question posed in the survey was: Does your dispatch center provide medically approved pre-arrival instructions?

Total Number of Providers With Them	132 (40.6%)
West	20 of 40 (50%)
South Central	16 of 56 (29%)
North Central	18 of 47 (38%)
Northeast	27 of 70 (39%)
Southeast	35 of 86 (41%)
Metro	16 of 26 (62%)

The intent of the question was to solicit responses relative to the instructions provided to the caller. However, some respondents may have interpreted the same question to relate to instructions to the responder. This interpretation was made by a very small number of the participants in focus groups; most replied in the context of instructions to the caller.

Adequate Pre-Arrival Instructions From The Dispatcher To Units

Instructions from dispatchers to “your service” were rated as inadequate by over 25% of the EMS agencies.

Total Reporting Adequate	228 of 324 (70%)
West	29 of 40 (73%)
South Central	36 of 57 (63%)
North Central	34 of 47 (72%)
Northeast	45 of 70 (64%)
Southeast	64 of 85 (75%)
Metro	20 of 25 (80%)

²As of July 2001 hospitals are not reporting significant increase in inter-facility transfers as a result of becoming Critical Access Hospitals.

Extensive discussions during focus group sessions of the functioning of dispatchers revealed these difficulties with the current system:

- dispatchers are often responsible for other functions as well, including staffing the local jail;
- many of the dispatchers in the state are not trained as dispatchers; and
- turnover of dispatchers is a problem, attributed by several focus group participants to the low pay received by dispatchers.

Alternatives to the present system include developing regional dispatch centers, equipped with geographic information systems (GIS) that can pinpoint the location of a given call. Geographic positioning units installed in response vehicles can be used to provide directions to the site. In a regional system, there should be opportunities to create full-time, higher-paying jobs. Investing in dispatch centers is one means of recognizing the clinical function of emergency medical services; callers will experience better outcomes if the entire system treats each call as requiring a medical response.

Report Patient Care Information En Route To Hospital

Communications en route to the hospital can also be important in patient care. The overwhelming majority of EMS agencies said that they always report patient care information while en route, but some say that never occurs.

Total Reporting Always	265 of 325 (83%);	Never: 6%
West	31 of 39 (80%)	Never: 3%
South Central	47 of 57 (83%)	Never: 9%
North Central	40 of 48 (83%)	Never: 2%
Northeast	66 of 75 (88%)	Never: 4%
Southeast	62 of 80 (77.5%)	Never: 7.5%
Metro	22 of 26 (85%)	Never: 11.5%

Not all trips to a hospital are emergency transports. In further examination of when the communications never take place, approximately 65% of those instances involved emergency responses. What the data do not reveal is how often the emergency responses may have involved such short times to the hospitals that en-route communications may not have been needed.

Communicate With Online Medical Direction While En Route

Slightly fewer than ½ of the agencies report never communicating with online medical direction while en route to the hospital.

Total Reporting Never	143 of 322 (44%)
West	15 of 38 (40%)
South Central	21 of 56 (37.5%)
North Central	18 of 48 (37.5%)
Northeast	37 of 74 (50%)
Southeast	36 of 80 (45%)
Metro	16 of 26 (61.5%)

There can be variation in contacts with the hospital as a function of the training of the responding personnel and the use of established medical protocols without the need for communication en route. Medical directors can have varying opinions on the need for communications while the patient is in transit.

Requests for Mutual Aid

Total Requesting	33% sometimes, 1% always
West	28% sometimes, 0% always
South Central	35% sometimes, 0% always
North Central	14% sometimes, 0% always
Northeast	36% sometimes, 3% always
Southeast	34% sometimes, 2% always
Metro	62% sometimes, 0% always

Most Typical Time of Day 8:00 a.m. - 5:00 p.m. (73%)
 Range is 64% (North Central) to 88% (Metro)

The most typical reasons for requesting mutual aid were:

- not having personnel available (66 responses)
- multiple victims (34)
- equipment or personnel inadequate (25)
- on another call (16)

Timely response to emergencies may require cooperation among different EMS providers, given their capacity to respond when the call is made. No positive or negative conclusion can be reached about the use of different strategies.

In some instances the personnel working with the responding agency were volunteers with full-time jobs in a different community, making them unavailable during working hours. Personnel may not be adequate in situations requiring advanced life support when the local rescue squad is staffed by persons without that training. In a couple of instances, the jaws of life were needed at the scene, and the local squad did not carry that equipment.

Other indications of coordinated services across providers are using tiered systems and calling directly for air transport. A little more than 1/3 of providers reported using tiered response, with some regional variation.

Total Using Tiered Response	105 of 295 (36%)
West	18 of 38 (47%)
South Central	16 of 51 (31%)
North Central	13 of 38 (34%)
Northeast	23 of 64 (36%)
Southeast	24 of 81 (30%)
Metro	11 of 23 (48%)

Four-fifths of providers reported that they have permission to call directly for air transport. Two regions vary from the statewide experience, South Central at 64%, and Northeast at 89%.

Predominantly rural regions of Nebraska are more likely to use the critical incident stress management program for their personnel. Statewide, 67% of all providers use the program, but only 53% of the providers in Southeast and 59% of those in the Metro region do so.

Respondents were asked to identify needs for their EMS services by agreeing or disagreeing with predetermined potential needs. The highest reported needs, and the regions reporting the highest need in those categories, are as follows:

- additional personnel: 58%; North Central (71%), South Central (68%)
- recruitment program: 54%; North Central (59%), South Central (58%), Northeast (57%)
- volunteers: 49%; South Central (54%); Metro (52%)
- retention program: 47%; North Central (53%), Northeast (49%)
- education program: 45.5%; South Central (51%), West (50%), North Central (49%)

The needs with the lowest reported concurrence were:

- paid personnel: 8%; Metro (4%), North Central (4%), South Central (7%)
- management: 10%; Metro (7%), Southeast (8%), West (8%)
- team building: 26%; Metro (22%), Southeast (22%), North Central (22%)

Only 23% of respondent services responded that they wanted an on-site assessment, but in the North Central region 32% responded yes, and in the Northeast region 25% responded yes. The focus group discussions of general need focused on recruiting personnel. This was generated by a concern that current EMTs will be “retiring” (includes volunteers) and that there is no pipeline of individuals willing to replace them.

CHARACTERISTICS OF THE PERSONNEL

Most of the EMS providers in Nebraska rely on volunteer personnel. Of 316 providers responding to the question “How many paid personnel does your organization have?” 271 had zero paid personnel. Of those with paid personnel, most had only a few; 21 of the 45 employed 10 or fewer paid personnel. As would be expected, the regions with the highest number of employed personnel per organization (mean) were Southeast (5) and Metro (30). The most frequently utilized personnel are volunteers who are not reimbursed; used by 237 of the 312 organizations responding to that question. These are the most typical personnel in the rural regions of the state (76% of respondents use non-reimbursed volunteers, for a total of 3,063 persons used). Considering volunteers who are reimbursed, the drop off is dramatic; 48 of 313 respondents use personnel fitting this category, compared to the 237 using non-reimbursed volunteers. The ratio of non-reimbursed to reimbursed volunteers is consistent across regions. Where volunteers are reimbursed the regional averages and medians are as follows:

<u>Region</u>	<u>Mean Reimbursement</u>	<u>Median</u>	<u>Percent of Agencies Using Volunteers w/o Reimbursement</u>
West	\$8.5	\$10	92%
South Central	\$7.9	\$8	72%
North Central	\$22	\$10	73%
Northeast	\$14	\$10	69%
Southeast	\$113	\$10	78%
Metro	None	None	76%
Statewide	\$38.4	\$10	76%

A full range of personnel, classified by training and capabilities, are used by the state’s providers. Statewide, the number of providers using each classification of personnel is as follows:

- Paramedics 54 of 324 reporting agencies
- EMT - Intermediate 50 of 324 reporting agencies
- EMT - Basic 298 of 333 reporting agencies
- First Responder 124 of 325 reporting agencies
- Other Type 127 of 319 reporting agencies

Of the 5,418 total number of persons working for EMS providers, 3,956 are men and 1,534 are women. Of the total number, 4,981 actively responded to calls during the last year (from 277 reporting agencies). The average age of the oldest person in active service is 59; the average age of the youngest is 25. There are 41 agencies in the state using someone aged 70 or older, and 12 using someone aged 80 or older (the oldest is 92). No agencies reported an average age of their workers over 55; the median average age reported is 40. The median average length of service reported by 315 agencies is 10 years.

Regional data comparable to those just reported for the state are provided in Table 2. Detailed information on the mean and median ages reported for the oldest and youngest respondents is available on request.

Table 2

Regional Data Describing the EMS Workforce

Agencies Using:

<u>Region</u>	<u>Paramedics</u>	<u>EMT-I</u>	<u>EMT-B</u>	<u>First Responder</u>	<u>Other</u>
West	7	5	32	14	18
South Central	11	8	53	23	25
North Central	8	2	44	16	16
Northeast	8	7	67	25	30
Southeast	8	18	77	42	29
Metro	12	10	25	4	9

Agencies Using:

<u>Region</u>	<u>Men</u>	<u>Women</u>	<u>Mean Age</u>	<u>Median Age</u>	<u>Median Service</u>
West	35	34	39	39	10 yrs
South Central	52	50	41	40	10 yrs
North Central	39	36	39	40	10 yrs
Northeast	57	56	39	40	10 yrs
Southeast	71	67	40	40	12 yrs
Metro	21	18	36	35	10 yrs

Focus group participants were asked if the total number of EMTs seemed accurate. Several of them stated that the number reflects a local definition of “actively responding to calls.” They stated that many EMTs may respond fewer than three times a year, having joined for reasons of wanting to be a member of the team, but not necessarily because they would be routinely available for calls. Focus groups discussed the reasons persons become EMT volunteers, and their thoughts included:

- tradition within families;
- feeling of self-satisfaction through helping the community, civic pride, duty to the community;
- nice equipment to play with;
- wanting to help because medical assistance is some distance from the community; and
- the “rush,” excitement.

Some participants in one focus group commented on the data concerning men and women in the agencies, saying that agencies are more open to women now than in previous years.

EQUIPMENT USED BY EMS PROVIDERS

When asked to report the average age of their ambulance fleet, 30 agencies reported that number to be 20 years or older. Those providers are spread across the six regions as follows:

- West 5
- South Central 5
- North Central 4
- Northeast 6
- Southeast 7
- Metro 3

On average, ambulances are driven 4,096 miles per year; they are driven 2,159 miles per year with patients in the vehicle. As might be expected, there is regional variation, likely affected by distance per run and total number of runs (the latter drives up the number of miles in the Metro region).

<u>Region</u>	<u>Average Chassis Miles</u>	<u>Average Patient Miles</u>
West	6,563	2,958
South Central	3,178	2,053
North Central	5,179	2,128
Northeast	3,457	1,773
Southeast	2,928	1,807
Metro	5,372	3,367

Of the 78 EMS providers planning to get a new ambulance during the current fiscal year, 74 plan to buy that vehicle. With the exception of the Metro region, where 46% of providers plan to get a new ambulance, the average ranges between 18% and 29% of providers.

Most of the ambulances in Nebraska have cellular communication capabilities; 84% of the 336 agencies answering this question had that capability. There is some variation across the six regions.

- West 88%
- South Central 74%
- North Central 98%
- Northeast 86%
- Southeast 79%
- Metro 85%.

Nearly all ambulances carry pediatric equipment—94% of all of the vehicles in the state (334 agencies reporting) and more than 90% in every region. The most frequent items of pediatric equipment carried are:

- airways (160 agencies)
- blood pressure cuffs (127)
- cervical collar (95)
- oxygen masks (68)
- backboard (63)
- splints (59)
- bag valve mask (48).

When asked what types of additional equipment might be needed, most respondents did not identify any. Of those who did identify additional equipment needs (145), the most commonly reported items were:

- AED 35 responses
- child/pediatric back boards 18 responses
- splints 17 responses
- back boards 14 responses
- child/pediatric car seat 13 responses
- BP monitor 12 responses
- car seat 11 responses

SERVICES PROVIDED

When asked to evaluate the level of patient care they provide, 84% of the 332 respondents used ratings of very good or excellent. None rated the service as poor, only two as fair, and 49 as good. The regional data show some variation in the percent rating either fair or good.

- West 15%
- South Central 21%
- North Central 11%
- Northeast 15%
- Southeast 16%
- Metro 12%

EMS providers provide a variety of health care services in addition to emergency medical services. The percentage of providers offering various specific services in each region is reported in Table 3.

In focus group discussions of this question, several participants voiced a need for more objective measurement of how well they are doing. Several also described a more precise definition of “care” which would specify response time, patient care, and transport time. Some agency representatives reported conducting community surveys to assess general satisfaction with emergency medical services. Others rely on feedback from those served, either voluntary or through a system of customer satisfaction instruments. Focus group discussions identified a need for more systematic assessment of quality of care, beginning with standardized community surveys.

Table 3
Additional Health Services Provided by Region

<u>Region</u>	<u>IV Monitor</u>	<u>Advanced Airway Mgt</u>	<u>BP Screening</u>	<u>Glucose Monitor</u>	<u>Auto Defib.</u>
West	44%	49%	59%	39%	72%
S. Central	24	31	38	28	71
N. Central	20	57	57	39	92
Northeast	30	63	53	41	84
Southeast	20	39	59	32	72
Metro	42	62	46	58	85
State Total	27	49	53	37	78

To obtain a little more detail about the delivery of services, questions were asked about the time and distance involved in responding to emergency calls and transporting patients. Table 4 presents medians for time from dispatch to arrival at the scene, distance from base to scene, and distance from the scene to the receiving health care facility.

Table 4
Median Distances in EMS Response and Transport

<u>Region</u>	<u>Minutes to Scene</u>	<u>Miles to Scene</u>	<u>Miles to Facility</u>
West	9	5	21
South Central	5	3	18
North Central	6	3	20
Northeast	6	3	17
Southeast	5	3	15
Metro	6	4	15
Statewide	6	3	16

More than 90% of agencies (N = 320 for this question) reported responding to the scene in 10 minutes or less (on average), with fewer than 3% needing more than 15 minutes to reach the scene. More than 90% reported traveling less than 9 miles to reach the scene, and fewer than 2% traveled 20 or more miles. Distance from the scene to the facility was somewhat greater; 40% reported traveling, on average, 20 or more miles to reach the facility. Most Nebraska EMS providers are in close proximity to other EMS services; 64% are 10 miles or closer. However, for those that are more distant from their nearest neighbor, that reality may be related to the time and distance involved in responding to calls. This hypothesis was tested using Pearson Correlation. The result shows that distance from the nearest EMS service is significantly related to response time, distance to the scene, and distance from the scene to the hospital.

Correlations

		Approximately how close is the nearest neighboring EMS service?	Between January 1 and December 31, 2000, what was the average response time from time of dispatch to arrival at patient?	Between January 1 and December 31, 2000, what was the average distance in miles from base to scene?	Between January 1 and December 31, 2000, what was the average distance in miles from scene to health care facility?
Approximately how close is the nearest neighboring EMS service?	Pearson Correlation	1.000	.168**	.180**	.258**
	Sig. (2-tailed)		.003	.001	.000
	N	337	309	309	302

**Correlation is significant at the 0.01 level (2-tailed).

FUNDING

The 345 agencies responding to the survey employ a variety of methods for financing their systems. The dominant sources of revenue are fees and government subsidies, the former identified as the primary revenue source by 28% of agencies and the latter by 25%. A major source of cash receipts is the Medicare program, although the percent of cash receipts seems out of proportion (on the low end) with the percent of transports accounted for by Medicare-eligible persons. The detailed information is provided in Table 5.

Table 5
Business Accounted for by Medicare Beneficiaries
Means

<u>Region</u>	<u>Percent Transports</u>	<u>Percent Cash Receipts</u>
West	51	29
South Central	73	55
North Central	58	38
Northeast	60	47
Southeast	60	39
Metro	47	36
State	60	42

Not all agencies bill Medicare for emergency services; approximately 40% do not. There is considerable variation by region.

- West 59% bill
- South Central 61% bill
- North Central 55% bill
- Northeast 72% bill
- Southeast 45% bill
- Metro 88% bill
- State total 60% bill

Lower percentages in each region billed Medicare during the year 2000 for the costs of drugs and/or supplies.

- West 41% billed
- South Central 54% billed
- North Central 53% billed
- Northeast 56% billed
- Southeast 34% billed
- Metro 47% billed
- State total 47% billed

A substantial number of agencies plan to begin billing Medicare for drugs and supplies—35% statewide.

Of those agencies who reported billing for various services, the median rates per patient miles are as follows:

- Advanced Life Support - emergency: \$6.25 (53 agencies)
- Advanced Life Support - non-emergency: \$6.33 (34 agencies)
- Basic Life Support - emergency: \$4.00 (145 agencies)
- Basic Life Support - non-emergency: \$4.50 (87 agencies)

The question of whether or not to bill for services, and how much to bill, generated considerable discussion in the focus groups. The experiences of the agencies has been quite varied. Those who have been billing all persons served have seen increases in revenue, in one instance \$20,000 in three months. Some agencies use an outside billing services, others are able to use either the local government or the local hospital. Among the agencies who are not currently billing Medicare, the following reasons were identified:

- the governing board for the service has a policy of not billing anyone;
- Medicare's system is too complicated and changes too often; and
- outside billing services are too expensive.

The state could play a more active role in helping to make the case for billing persons served.

PERSONNEL RECRUITMENT AND RETENTION

There is a widely held perception that maintaining a volunteer work force in EMS is increasingly problematic. A previous study of EMS in Nebraska, which surveyed 35 EMS units in four regional areas, yielded these findings:

- “There is a high burn-out rate among rural, volunteer EMS providers.”
- “Volunteer providers could potentially leave rural EMS because of increased training and re-certification requirements which are placing excessive personal time and financial commitments on volunteers.”
- “Support needs to be given to the recruitment and retention of volunteers in rural EMS. The volunteer system in rural EMS needs to be supported by local rural governments and citizens.”³

The survey used in the current report reflects a much larger and more representative sample of Nebraska providers and occurred approximately seven years later. A review of the results from the current survey paints a slightly different picture when contrasted with the earlier survey and “conventional wisdom.”

If recruitment were a pressing issue, EMS providers might be expected to have a program in place. However, more than 2/3 of the agencies in Nebraska do not have an active recruitment program. In only one region, the Metro, are there 40% or more of the agencies with active programs. While there are only 103 agencies with active programs, 284 agencies responded to the question asking them to rate the success of their recruitment program in the past year. Their responses are displayed in Table 6.

Table 6
Ratings of Recruitment Programs

<u>Region</u>	<u>% Extremely Unsuccessful</u>	<u>% Slightly Successful</u>	<u>% Moderately Successful</u>	<u>% Quite Successful</u>	<u>%Extremely Successful</u>
West	22.6	6.5	54.8	9.7	6.5
South Central	31.5	27.8	33.3	5.6	1.9
North Central	16.7	31.0	28.6	11.9	11.9
Northeast	25.8	21.0	30.6	21.0	1.6
Southeast	19.2	32.9	31.5	11.0	5.5
Metro	14.3	28.6	33.3	19.0	4.8

³Rural Health Task Force, Nebraska Rural Development Commission. The Rural EMS System in Nebraska: Characteristics and Policy Issues from a Recent Survey. July 1994.

Slightly more than 70% of the agencies rate the potential for recruiting qualified applicants to be either poor (26.2%) or fair (44.1%). Details are reported in Table 7.

Table 7
Potential for Recruiting Qualified Applicants

<u>Region</u>	<u>% Poor</u>	<u>% Fair</u>	<u>% Good</u>	<u>% Very good</u>
West	20.0	45.7	25.7	5.7
South Central	37.5	42.9	14.3	5.4
North Central	28.3	39.1	21.7	6.5
Northeast	26.5	41.2	20.6	11.8
Southeast	22.9	48.2	18.1	7.2
Metro	13.0	47.8	21.7	17.4
Statewide	26.0	44.1	19.6	8.4

Of course, the fact that there are 425 staffed agencies in Nebraska, and that they work with 5,418 personnel, is some indication that while there may be problems in recruitment, currently people are filling available slots. Thus, this appears to be a problem of how to continue to successfully staff agencies. This interpretation was supported by comments in the focus group discussions.

In thinking about what could be done to improve the prospects for recruiting new personnel, agencies responded to a specific question about whether or not distance learning would help in recruiting basic EMT or first responder personnel—49% said yes. More than half of the agencies in the North Central, Northeast, and Southeast regions, and only 27% of those in the Metro region, said yes. Of course, without collecting data directly from participating personnel, we cannot assess the magnitude of the difference made by distance learning, specifically whether or not having distance learning programs would result in an increase in the pool of volunteers. Respondents were asked, in an open response format, for their suggestions for improving recruitment. Seventy-one of them gave ideas for education and/or completing the national registry test. These were responses to lighten the burden of training and testing. The next most prevalent response was to develop some incentives for the volunteers (16 responses). Some specific suggestions:

- tax breaks
- retirement program
- discount on government services.

Meeting personnel requirements includes retaining those who have agreed to work for the EMS provider. During the last year prior to the time they completed the survey, 332 EMS providers reported losing 570 personnel. Almost 30% reported losing no personnel, and only 25% reported losing three or more persons. Agencies were asked to give the reasons persons

resigned. The question was formatted with a series of fixed responses, reasons thought by the investigators to be important, and an opportunity to specify other reasons. In descending order of percentage responses, the agencies gave these reasons:

- moving 38.9%
- time 30.7%
- job 26.8%
- family 25.7%
- other 23.3%
- age 18.0%
- length of service 16.2%

None of the “other” reasons reached a percentage as high as length of service. EMS providers were asked to offer suggestions for improving retention of new members of their organizations. The most frequent response (31) was to offer pay. The second (13) was to ease the burden of training and calls, and the third (12) was to make training accessible.

One means of improving retention could be to give the volunteers recognition in their community. Nearly $\frac{2}{3}$ of the EMS providers indicated that they do so. The most typical form of recognition, offered by 98 of the responding providers, is an award of some type, such as a pin, a certificate, or a plaque. Many providers (50) hold a special event in the community to recognize volunteers, and several (29) have promoted the volunteers through publicity campaigns. The public relations programs found among these agencies include:

- using local newspapers (53 agencies),
- fire prevention programs (32),
- fund raisers (15),
- education/training activities (14),
- EMS week (13), and
- working with schools (11).

Other ideas for recruitment emerged during focus group discussions:

- have cadet programs for high school students;
- work with local employers to encourage volunteers; and
- create a greater sense of community pride in the EMS program.

EDUCATION AND TRAINING

Most of the EMS providers, 85% of those answering the question, have an active training program. Three regions are below that statewide percentage—South Central (79%), Northeast (84%), and Metro (80%). Nearly all personnel travel to a surrounding community to attend training classes; 96% of the 341 reporting agencies said this was the practice. The level of satisfaction with training agencies is quite high—only 13% of the agencies were either extremely or slightly unsatisfied. Nearly 4/5 of local agencies (274 of 345) reported having local support for training: 7.5% for continuing education, 5.8% for basic training, and 66.1% for both continuing education and basic training. Regions less likely to report support for both categories are the West, South Central, and North Central regions. Of the agencies reporting spending money for training, the average amount was \$3,522 and median was \$1,750. During calendar year 2000, 313 agencies reported that a total of 684 persons applied for training, and 602 completed the training for Basic EMT and First Responder.

Completion of training should, of course, yield certain results. Assuming that everyone who completed training should take the National Registry Technician or First Responder Exam, 87% of those who completed training in 2000 passed the exam.⁴ When asked to offer reasons for persons not passing the exam, respondents offered the following:

- wording of the test, bad test (15 responses)
- did not study enough (14 responses)
- inadequate instruction (13 responses)
- exam too difficult (11 responses)

When asked why some personnel did pass the exam, respondents offered these reasons:

- studied, prepared (68 responses)
- instructor, class (20 responses)
- intelligent/innate ability (14 responses)
- lucky (8 responses)

A majority of respondents were unsatisfied with the exam (extremely—35%; slightly—21%) and only 13% were either quite satisfied or extremely satisfied. Two regions deviated from that pattern; in the West region, only 46% of respondents were unsatisfied, and in the Metro region, only 28% were unsatisfied. Several agencies have engaged in efforts to improve the readiness of personnel for the National Exam. In descending order of their use by agencies, these efforts include:

- study session, groups (40 responses)
- additional training (19 responses)

⁴This is based on the assumption that those completing the questionnaire used the number of persons applying for training as the basis for reporting how many completed the training and how many passed the exam.

- practice tests, quizzes (14 responses)
- provide training aides, study guides (10 responses)

Different modalities for transmitting educational material could be used to lessen the burden of travel for trainees. Those modalities would require that various pieces of equipment be available locally. Currently, only 112 of 330 (33%) agencies reported using distance learning for continuing education, but 255 of 306 (83%) indicated that they would use distance learning. More than 50% of the providers in two regions, West and North Central, already use distance learning and in a third, South Central, 45% use distance learning. Nearly all agencies (95%) have a VCR monitor, but 50% do not have a computer on site and 57% do not have Internet access. In only two regions, Southeast and Metro, do a majority of agencies have a computer on site, and only in Metro do a majority have Internet access.

Some state support is available for basic training and continuing education. However, not all agencies reported applying for state reimbursement—29% did not do so for basic training, and 44% did not do so for continuing education. Providers in the Metro region were most likely to apply for each—84% for basic training and 71% for continuing education. Providers in the West region were least likely to apply for basic training reimbursement; only 62% did so. Providers in the South Central region were least likely to apply for continuing education reimbursement; only 46% did so. Most providers (66%) reported receiving reimbursement in a timely manner. Reasons given for not applying for reimbursement varied slightly from basic training to continuing education.

Reasons for not applying for basic training reimbursement:

- unaware (26 responses)
- supported by others (18 responses)
- process to get reimbursed (11 responses)

Reasons for not applying for continuing education reimbursement:

- unaware (57 responses)
- supported by others (14 responses)
- process to get reimbursed (15 responses)

State forms and protocols are available for use by local EMS providers. Nearly all providers take advantage of that availability; 88% use the NARSIS form and 85% use state model protocols. Across the six regions, somewhat fewer providers use those forms and protocols in the Southeast and Metro regions (NARSIS, 79% and 82%; protocols 75% and 73%).

Agencies were asked if they use a modified version of the established protocol; 58% of the 298 responding to that question said yes. Responses from the 40 agencies not using the NARSIS form specified these reasons:

- NARSIS too long, complicated 13 responses
- have our own 10
- don't have forms 5

In thinking about training programs for the future, 57% of 322 agencies said they would like their organization to become more advanced in the level of service provided. In only two regions, Southeast and North Central, did fewer than 50% of the agencies so respond, and in those two regions, more than 47% indicated they wanted a more advanced level. When asked if anything was keeping them from advancing, agencies offered these responses:

- time 31 responses
- budget/cost 29 responses
- lack of personnel 17 responses
- lack of training in area 15 responses
- doctors/medical director do not approve 4 responses

Respondents were asked what the EMS program could do to better meet their training needs. The most frequently mentioned responses were:

- targeted training (72 agencies)
- national registry (22)
- payment for training and funding (19)
- recruitment and retention (16)
- NARSIS (12)

Agencies responding to this survey seemed much more concerned with what they offer to the current personnel than with problems of recruiting new personnel.

During the focus group discussions the following changes in training and testing were suggested:

- better assessment of instructors, improving their abilities or finding replacements;
- testing after blocks of training;
- more frequent offering of refresher courses;
- testing and training by modules, to be selected consistent with the actual responsibilities of local EMTs, which can be a function of what the local medical director allows; and
- more use of distance learning.

CONCLUDING OBSERVATIONS

One of the focus group discussions generated these three overall observations/recommendations:

1. Although the protocol for medical direction is important, it takes a great coordination between medical directors to work out well. Medical directors in the same region should become comfortable with each other. A high level of comfort and trust would make the medical control and communication function better and more smoothly.
2. There seems to be a public mind set that people do not care about EMS until they themselves encounter the need for services (e.g., have a heart attack and need in-time ambulance and EMS).
3. There is a need for public education on what 911 is for and what an EMT is capable of doing. If people can appreciate that, there might be a bigger chance for tax-based funding.

Provision of emergency medical services has matured from a practice of “load and transport” to a medical service that can provide life-saving assistance over the phone, at the scene, and in transit to a trauma facility. Unfortunately, the governing, financing, and operating practices of EMS have not, at least universally, evolved in concert with the functional changes. Nebraska state government could play an active role in helping to change public perception of EMS, encourage changes in dispatching to increase use of medical protocols, and provide material to local governing bodies to help them understand the changed environment in which EMS operates.

Appendix A
Map of the EMS Regions of Nebraska

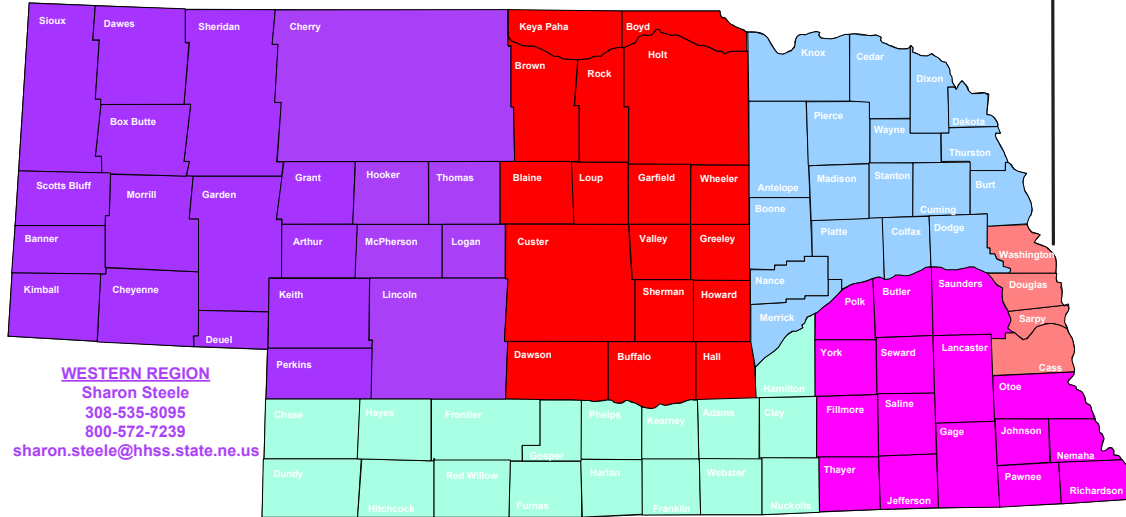
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Appendix B
The Survey Questions

Nebraska Rural Emergency Medical Services (EMS) Survey
Nebraska Center for Rural Health Research
984350 Nebraska Medical Center
Omaha, NE 68198-4350
January 2001

Part 1 - CONTACT INFORMATION

Name of EMS Organization: _____

Address: _____

City: _____ St: _____ Zip: _____

Phone #: _____ Fax #: _____

Email: _____ County: _____

EIN #: _____

Please record the name and telephone number of the person who completes this questionnaire in case we have further questions about the information you provided.

Person Completing Survey

Title: _____

Primary EMS Certification: _____

Address: _____

City: _____ St: _____ Zip: _____

Phone #: _____ Fax #: _____

Email: _____ County: _____

Part 2 - ORGANIZATION

1. Are you a transporting or non-transporting service?
 Transporting
 Non-transporting
2. Are you the sole EMS provider in your county? yes no
3. Are you a separate organization from the fire department? yes no
4. If your department is both a fire and ambulance department, are you required to be a firefighter to serve on the ambulance? yes no
5. Do you have 911? yes no
6. If yes, is it enhanced 911? yes no
7. How many first response/non-transporting services use your ambulance service? _____
8. If you are a non-transporting service, how many transporting services do you use? _____
9. How many EMT's are required by your department to go on a call? _____
10. Does your dispatch center provide medically approved pre-arrival instructions? yes no
11. Does your dispatch center provide your service with adequate pre-arrival instructions? yes no
12. If not, what areas need to be improved? _____
13. How many calls did you respond to between Jan. 1 and Dec. 31 2000? _____ calls
14. How many calls were:
 Emergency
 Non-emergency
 Inter-facility Transfer – Emergency
 Inter-facility – Non-emergency
 Other (*please specify*) _____
15. Do you report patient care information while en-route to the hospital?
- | | | |
|-------|-----------|--------|
| Never | Sometimes | Always |
| 1 | 2 | 3 |
16. Do you communicate with online medical direction while en-route to the hospital?
- | | | |
|-------|-----------|--------|
| Never | Sometimes | Always |
| 1 | 2 | 3 |
17. How often have you had to request mutual aid because you were unable to respond to a call?
- | | | |
|-------|-----------|--------|
| Never | Sometimes | Always |
| 1 | 2 | 3 |

18. What time of day did you most often have to request mutual aid?

- 8:00 am to 5:00 pm
- 5:01 pm to Midnight
- Midnight to 7:59 am

19. Why did you have to request mutual aid _____

20. Do you use tiered response in the delivery of EMS? yes no

21. What percentage of total calls deals with the following populations?

- Children _____ %
- Elderly _____ %
- Minorities _____ %
- Disabled _____ %

22. How many times between Jan. 1 and Dec. 31 2000 did your service use air transport? _____ times

23. Is your service allowed to call directly for air transport without first talking to a doctor? yes no

24. How often did you meet with your medical director between Jan. 1 and Dec. 31 2000? _____ times

25. Has your organization used the critical incident stress management program? yes no

26. What do you think your EMS service needs? (*check all that apply*)

- Paid personnel
- Volunteers
- Additional personnel
- Additional equipment
- Education program
- Team building
- Management
- Recruitment program
- Retention program
- Other (*please specify*) _____

27. Do you want an on-site assessment of your ambulance service by the EMS Program? yes no

Part 3 - PERSONNEL

1. How many trained EMS personnel does your organization currently have?

- _____ Paid
- _____ Volunteer without reimbursement
- _____ Volunteer with reimbursement

2. If you offer volunteers reimbursement, how much (*on average*) do they receive? \$ _____

3. How many of each EMS provider belongs to your department?

- _____ EMT-P
- _____ EMT-I
- _____ EMT-B
- _____ First Responder
- _____ Other (*please specify*) _____
- _____ Men
- _____ Women

4. How many EMS personnel actively responded to calls in the last year? _____

5. What is the oldest age person in active service? _____

6. What is the youngest age person in active service? _____

7. What is the average age of people in your service? _____

8. How many men do you have who actively respond to calls? _____

9. How many women do you have who actively respond to calls? _____

10. What is the average length of service of your members? _____

Part 4 - EQUIPMENT

1. How many licensed EMS transport vehicles or ambulances did you have available for operation between Jan. 1 and Dec. 31 2000? _____ vehicles
2. In what year was your ambulance service established? _____
3. Please estimate the average age of your ambulance fleet at the end of 2000. _____ years old
4. How many chassis miles (*total miles*) do you estimate your ambulance fleet traveled between Jan. 1 and Dec. 31, 2000? _____ miles
5. How many loaded miles (*miles driven with a patient in the ambulance*) do you estimate your ambulance fleet traveled between Jan. 1 and Dec. 31 2000? _____ miles
6. Do you plan to get a new ambulance in FY 2001? _____ yes _____ no
7. If so, do you plan to:
_____ Buy
_____ Lease
_____ Other (*please specify*) _____
8. Do your units have cellular communication capabilities? _____ yes _____ no
9. Do your units carry pediatric equipment? _____ yes _____ no
10. If yes, please list specific pediatric equipment.

11. If you need additional equipment, what types do you need?

Part 5 - SERVICES PROVIDED

1. How would you rate your level of patient care?

Poor	Fair	Good	Very Good	Excellent
1	2	3	4	5

2. How far are you from the nearest health care facility? _____ miles

3. How far are you from the nearest trauma center? _____ miles

4. Between Jan. 1 and Dec. 31 2000, what was the average response time from time of dispatch to arrival at patient?
_____ minutes

5. Between Jan. 1 and Dec. 31 2000, what was the average distance, in miles, from base to scene? _____ miles

6. Between Jan. 1 and Dec. 31 2000, what was the average distance, in miles, from scene to health care facility?
_____ miles

7. Approximately how close is the nearest neighboring EMS service? _____ miles

8. Do you provide other health care services? _____ yes _____ no

9. Please mark the services (*medical health care*) that you provide on the list below:

- _____ IV monitoring
- _____ Advanced airway management
- _____ BP screening
- _____ Glucose monitoring
- _____ Auto defibrillation
- _____ Other _____
- _____
- _____
- _____
- _____

Part 6 - FUNDING

1. What is your primary revenue source?
 Fees for service (*Medicare, Medicaid, private insurance, private pay, special service contract*)
 Government subsidies (*local, state, federal*)
 Other (*please specify*) _____
2. What is your base mileage rate per patient mile?
 - a. - ALS – Emergency \$ _____
 - b. - ALS – Non-emergency \$ _____
 - c. - BLS – Emergency \$ _____
 - d. - BLS – Non-emergency \$ _____
3. Do you do your own billing or do you use a billing service?
 Do it ourselves
 Use a service
4. Who is your billing service? _____
5. If you do not charge for your services, why not? _____

6. Do you bill Medicare for emergency services? yes no
7. For how many years have you been billing Medicare for ambulance services? _____ years
8. Please estimate the percent of your Medicare claims on which you accepted assignment between Jan. 1 and Dec. 31 2000. _____ % (*By accepting assignment, we mean agreeing to accept the Medicare-approved amount as payment-in-full.*)
9. Approximately what percent of your total transports between Jan. 1 and Dec. 31 2000 involved Medicare patients? _____ %
10. What percent of your total cash receipts between Jan. 1 and Dec. 31 2000 came from Medicare? _____ %
11. Between Jan. 1 and Dec. 31 2000 did you bill Medicare for drugs and/or supplies either in the base rate or itemized? yes no
12. For how many years have you been billing Medicare for drugs and/or supplies? _____ years
13. Do you plan to begin billing Medicare for drugs and/or supplies in the next two years? yes no

Part 7 - RECRUITMENT & RETENTION

1. Do you have an active recruitment program in place for your service? ____ yes ____ no

2. Do you have an active retention program in place for your service? ____ yes ____ no

3. How successful has your recruitment program been in the last year?

Extremely Unsuccessful	Slightly Unsuccessful	Moderately Successful	Quite Successful	Extremely Successful
1	2	3	4	5

4. How do you rate the potential for recruiting qualified applicants in your community/area?

Poor	Fair	Good	Very Good	Excellent
1	2	3	4	5

5. How many EMS personnel have you recruited between Jan. 1 and Dec. 31 2000? _____

- _____ EMT-P
- _____ EMT-I
- _____ EMT-B
- _____ First Responder
- _____ Men
- _____ Women

6. In the last year, how many of your members have resigned? _____

7. What are the reasons people gave for resignation? (*check all that apply*)

- _____ Length of Service
- _____ Age
- _____ Moving
- _____ Time
- _____ Family
- _____ Job
- Other _____

8. Could you recruit more people if distance learning was available for Basic EMT or First Responder training?
____ yes ____ no

9. What would you suggest for recruitment of new members? _____

10. What would you suggest for retention of new members? _____

Part 8 - COMMUNITY RECOGNITION

1. Does your community or organization offer recognition for members? ____ yes ____ no

2. What kind of recognition do the members of your service receive?

3. What type of public relations programs do you have to promote your service?

Part 9 - EDUCATION & TRAINING

1. Would you like your organization to become more advanced in the level of service you provide?
____ yes ____ no

2. If yes, is anything keeping you from advancing? *(please specify)*

3. Does your ambulance service have an active training program? ____ yes ____ no

4. Do your members travel to surrounding communities to attend training? ____ yes ____ no

5. Do you use the state NARSIS form? ____ yes ____ no

6. If not, why? _____

7. Do you use state model protocols? ____ yes ____ no

8. Do you use modified versions of established protocol? ____ yes ____ no

9. Between Jan. 1 and Dec. 31 2000, how many individuals applied for Basic EMT and First Responder training?
individuals

10. How many completed the training? _____

11. How many passed the National Registry Emergency Technician or First Responder Exam? _____

12. Why do you think those who did not pass the exam didn't pass? _____

13. Why did they pass the National Registry exam _____

14. What have you done to assist individuals with passing the National Registry Exam? _____

15. What is your level of satisfaction with the National Registry Exam?

Extremely Unsatisfied	Slightly Unsatisfied	Moderately Satisfied	Quite Satisfied	Extremely Satisfied
1	2	3	4	5

16. Do you think the training to become certified as an EMT is too long? yes no

17. What is your level of satisfaction with the training agency you use?

Extremely Unsatisfied	Slightly Unsatisfied	Moderately Satisfied	Quite Satisfied	Extremely Satisfied
1	2	3	4	5

18. Do you have local financial support for continuing education and basic training?

Continuing education only
 Basic training only
 Both

19. What is the approximate size of your annual training budget? \$ _____

20. Do you currently use distance learning for continuing education? yes no

21. Would you use distance learning for continuing education? yes no

22. Do you have access to a computer on site? yes no

23. Do you have Internet access? yes no

24. Do you have a VCR monitor? yes no

25. What percentage of your personnel has access to computers at home? _____ %

26. Do you apply for state reimbursement for basic training? yes no

27. If not, why not? _____

28. Do you apply for state reimbursement for continuing education? yes no

29. If not, why not? _____

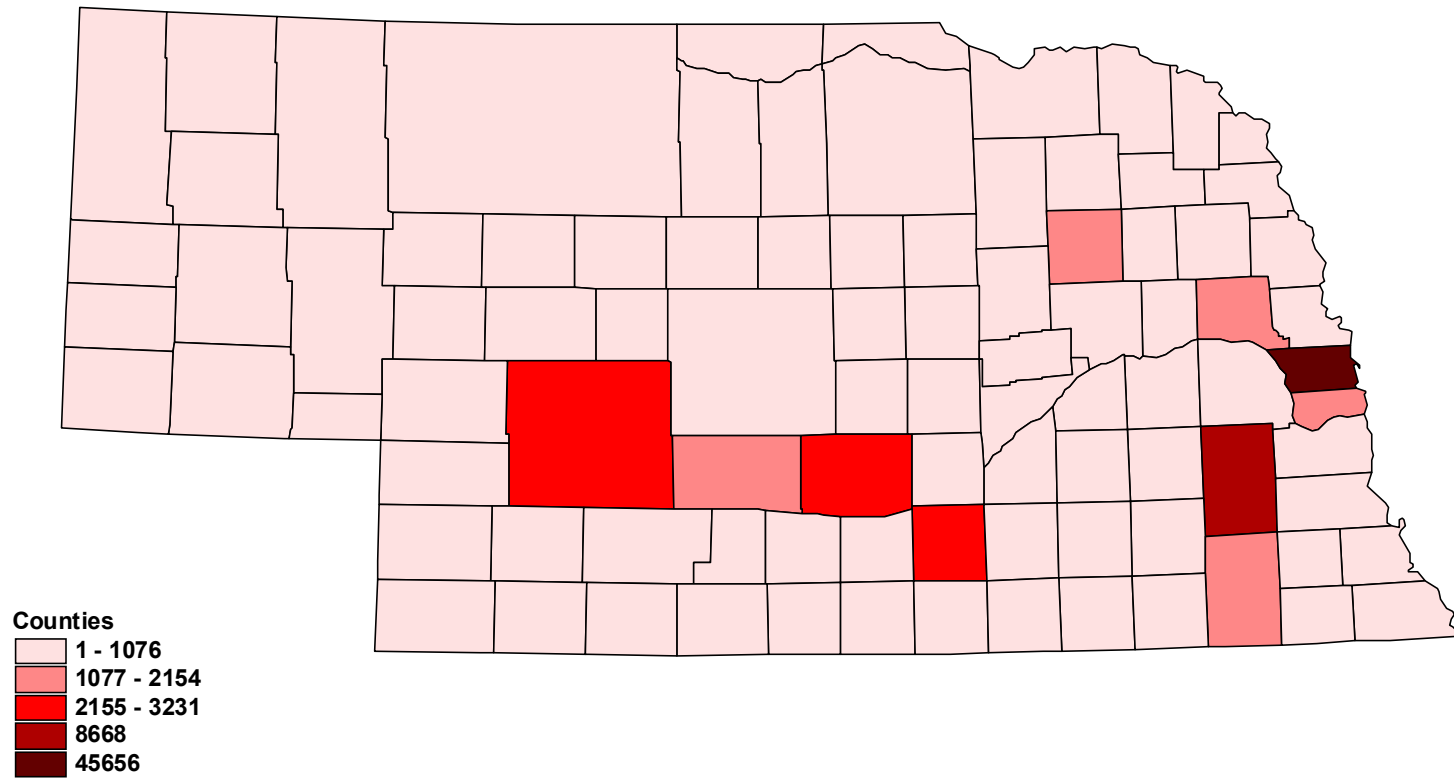
30. Do you receive state reimbursement in a timely manner? yes no

31. If not, why not? _____

32. What can the EMS Program do to better meet your needs? _____

Appendix C
EMS Resource Maps

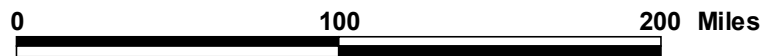
EMS Resources - Map #1 Calls by County



Counties

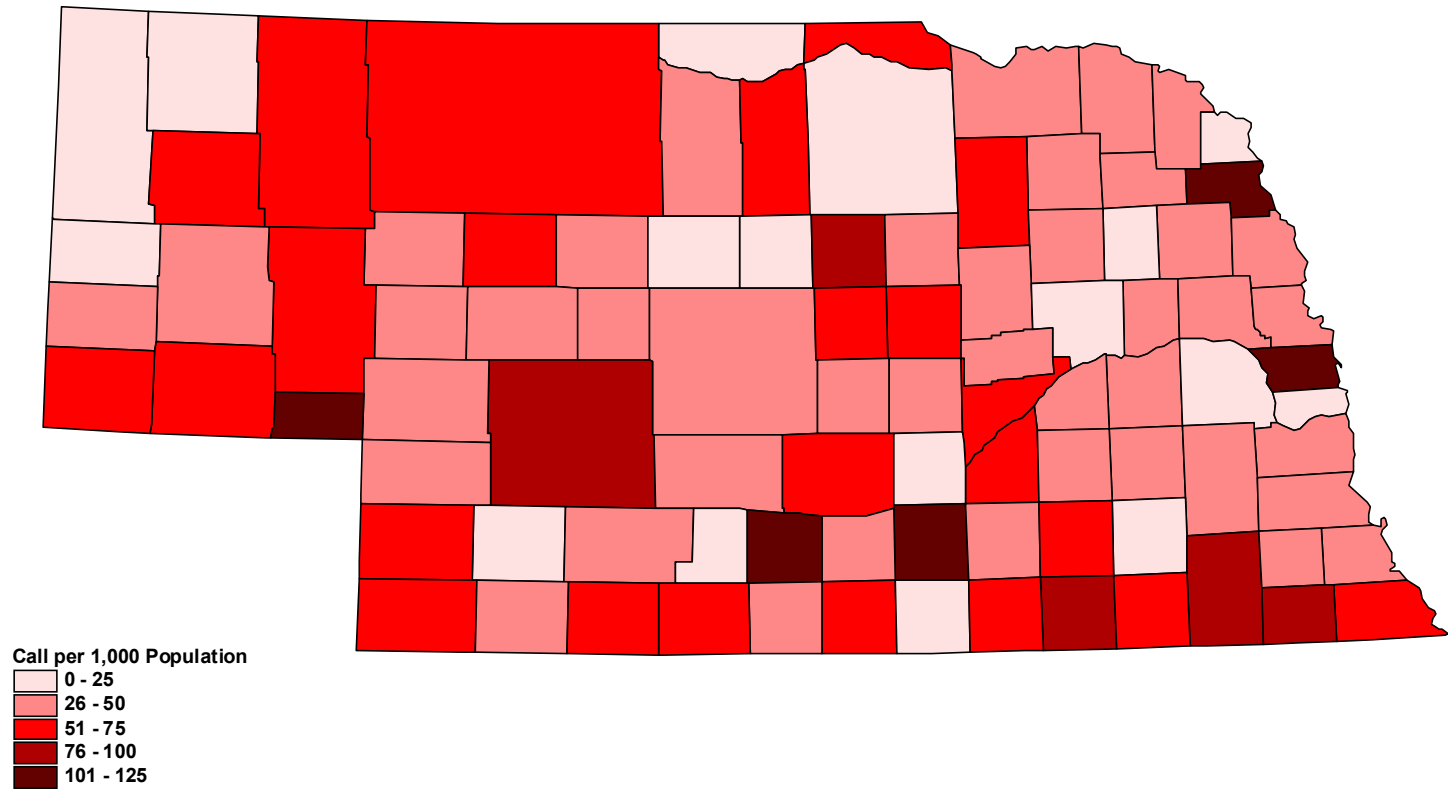
- 1 - 1076
- 1077 - 2154
- 2155 - 3231
- 8668
- 45656

Source: NHHSS, 2001
* Note: 7 calls unassigned

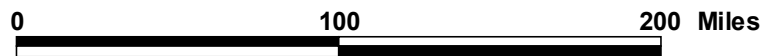


EMS Resources - Map #2

EMS Calls per 1,000 County Population

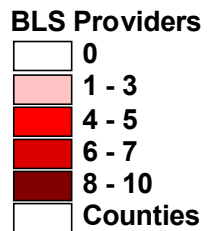
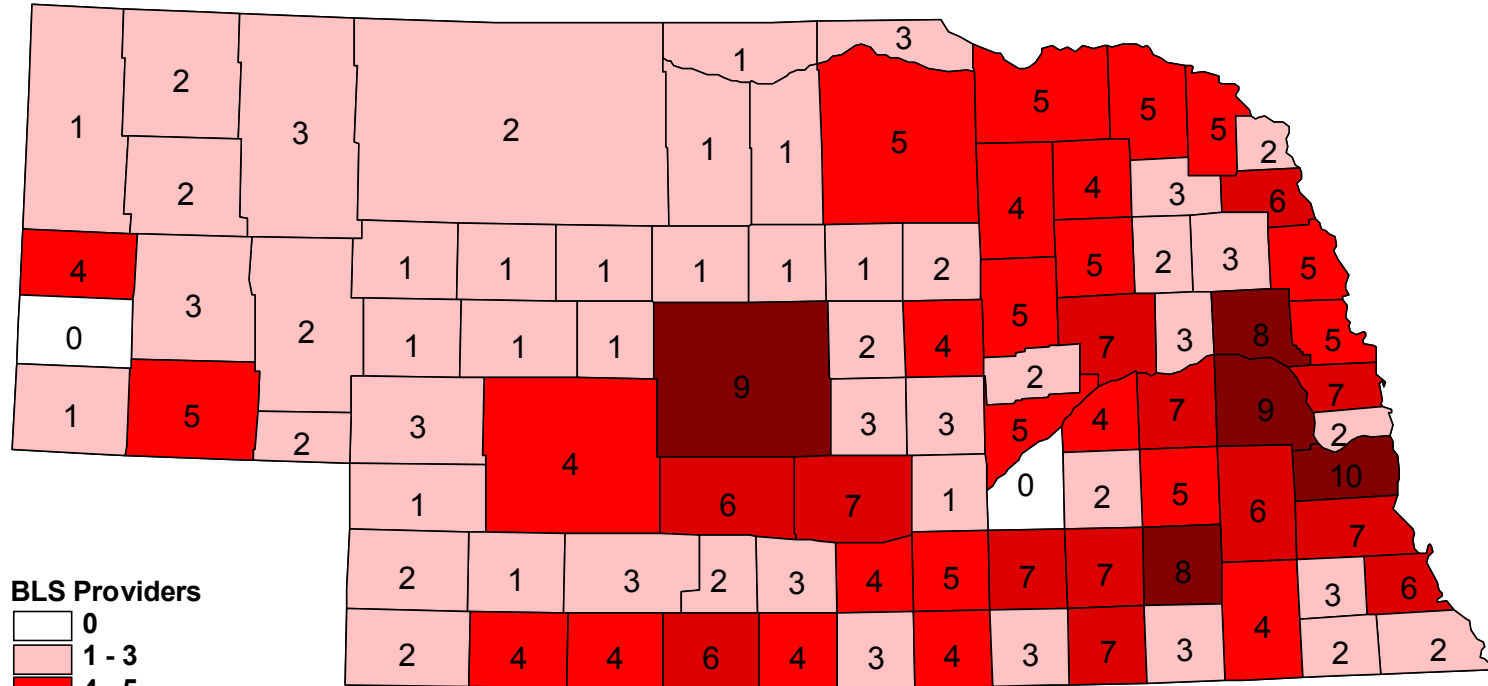


Source: NHHSS, 2001



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EMS Resources - Map #4 BLS Licensed Providers



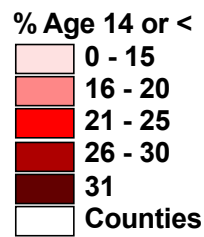
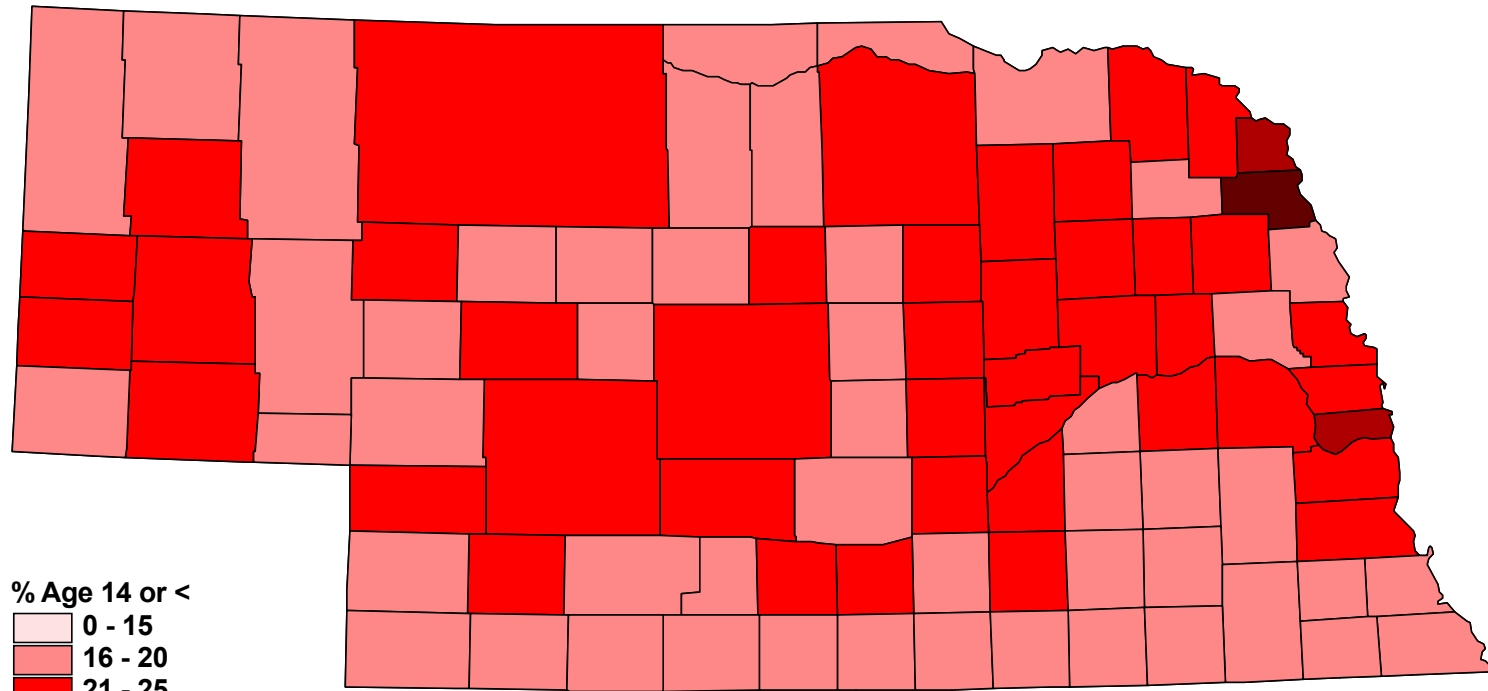
Source: NHHSS, 2001



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EMS Resources - Map #6

Percent County Population Below Recruitment Age of 14 Years



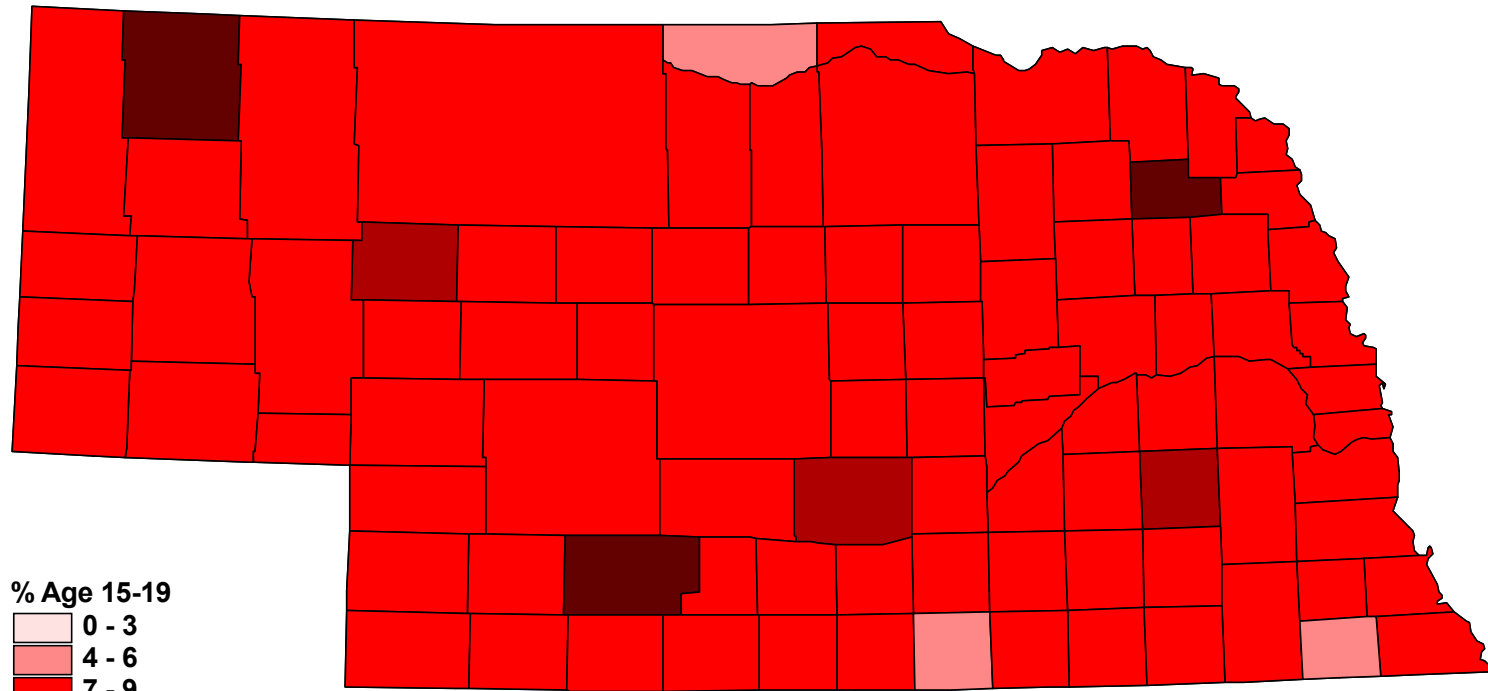
Source: NHHSS, 2001



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University of Nebraska Medical Center - 2001

EMS Resources - Map #7

Percent County Population of Recruiting Age 15-19 Years



% Age 15-19
0 - 3
4 - 6
7 - 9
10 - 11
12 - 14
Counties

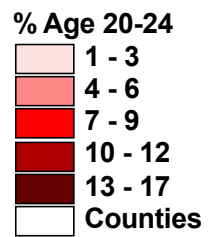
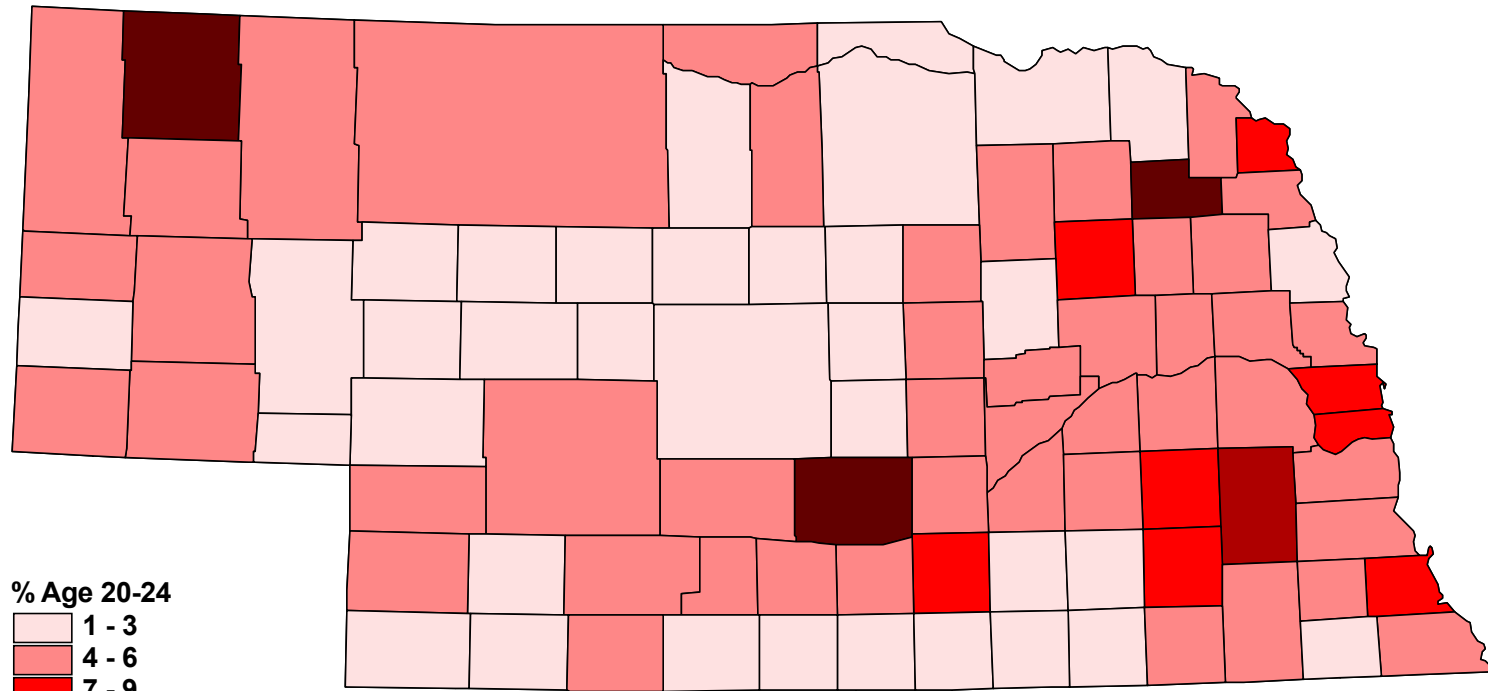
Source: NHHSS, 2001



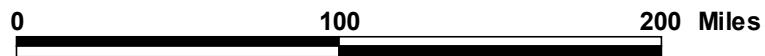
Preventive and Societal Medicine
University of Nebraska Medical Center - 2001

EMS Resources - Map #8

Percent County Population of Starting Age 20-24 Years



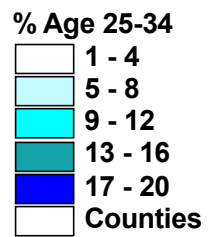
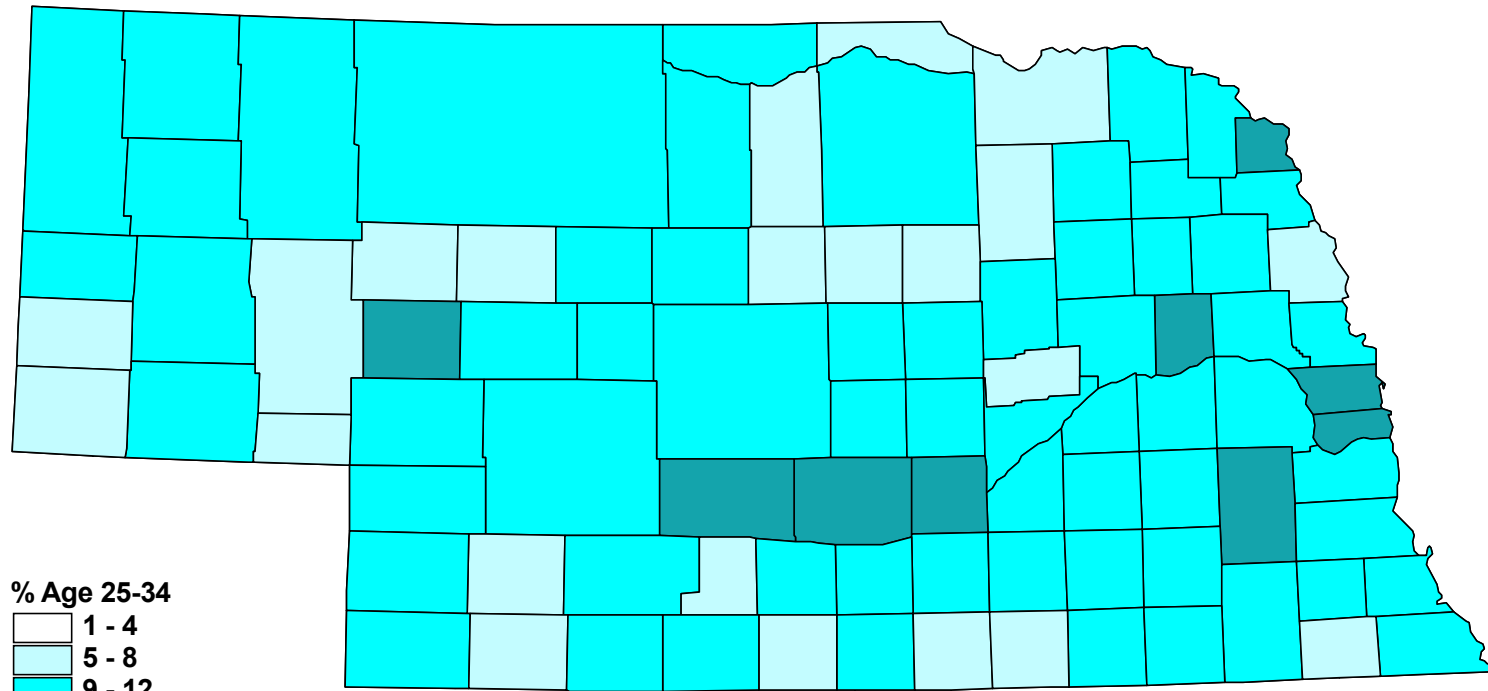
Source: NHHSS, 2001



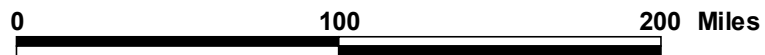
Preventive and Societal Medicine
University of Nebraska Medical Center - 2001

EMS Resources - Map #9

Percent County Population at the Busy Age of 25-34 Years



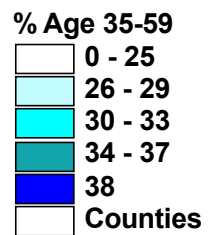
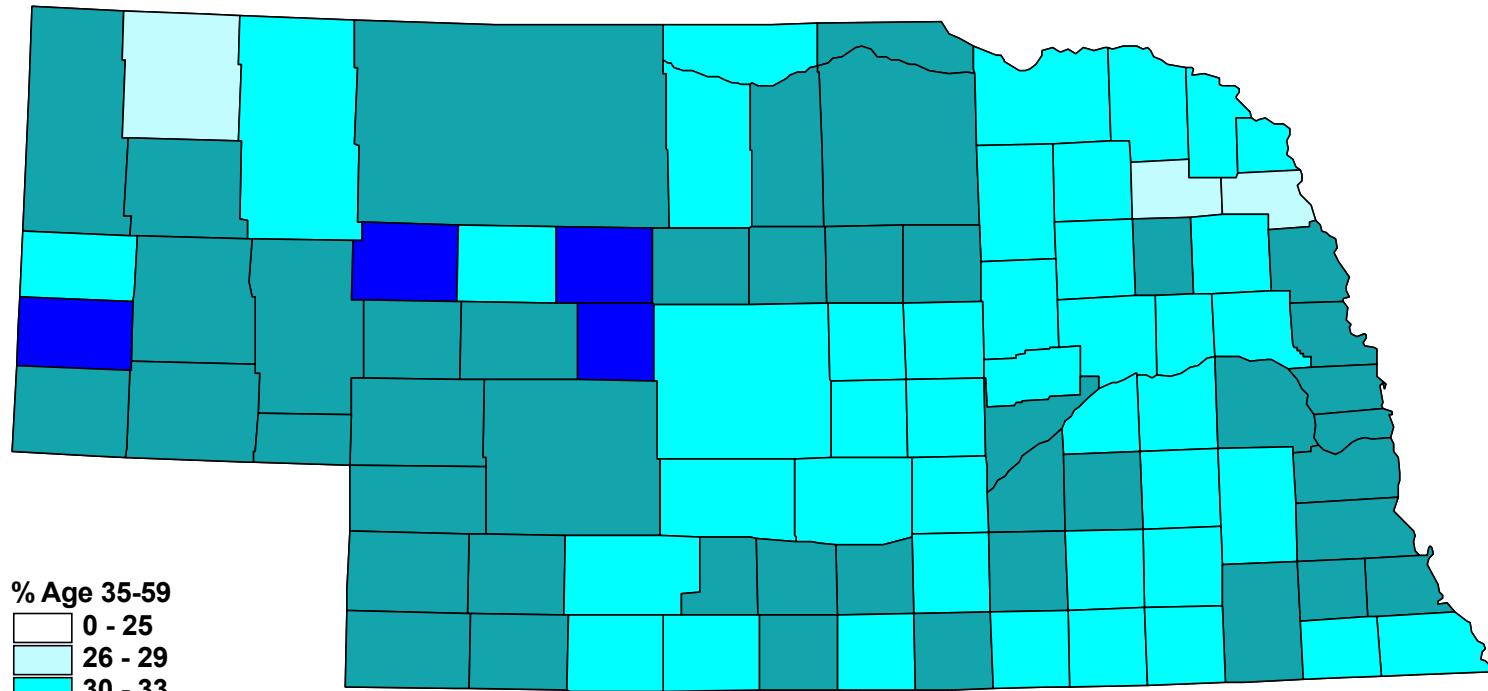
Source: NHHSS, 2001



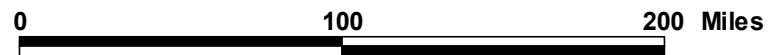
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University of Nebraska Medical Center - 2001

EMS Resources - Map #10

Percent County Population of Peak Involvement Age 35-59 Years

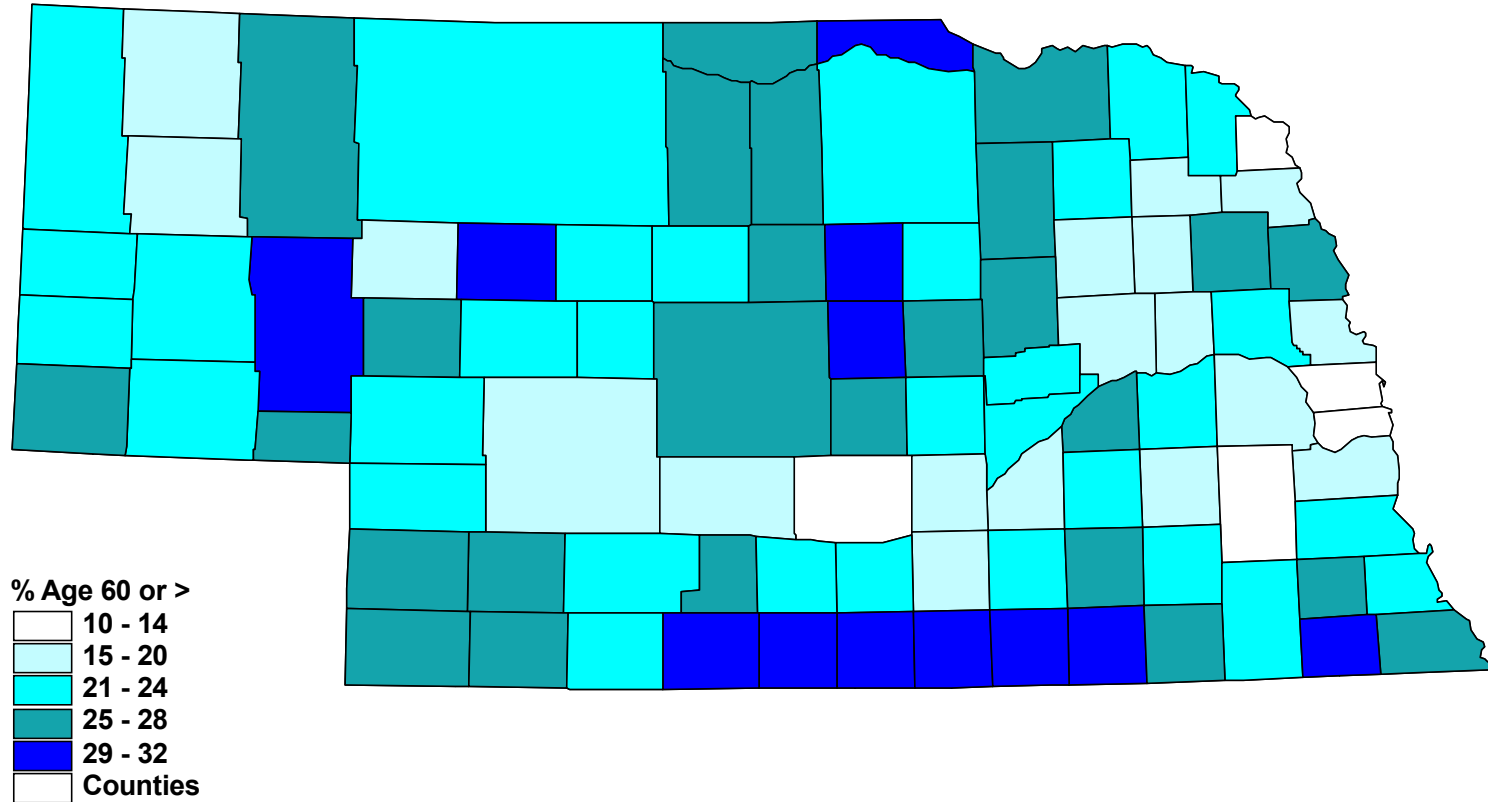


Source: NHHSS, 2001

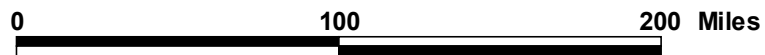


EMS Resources - Map #11

Percent County Population at Decreasing Level of Involvement Age 60 Years or Greater

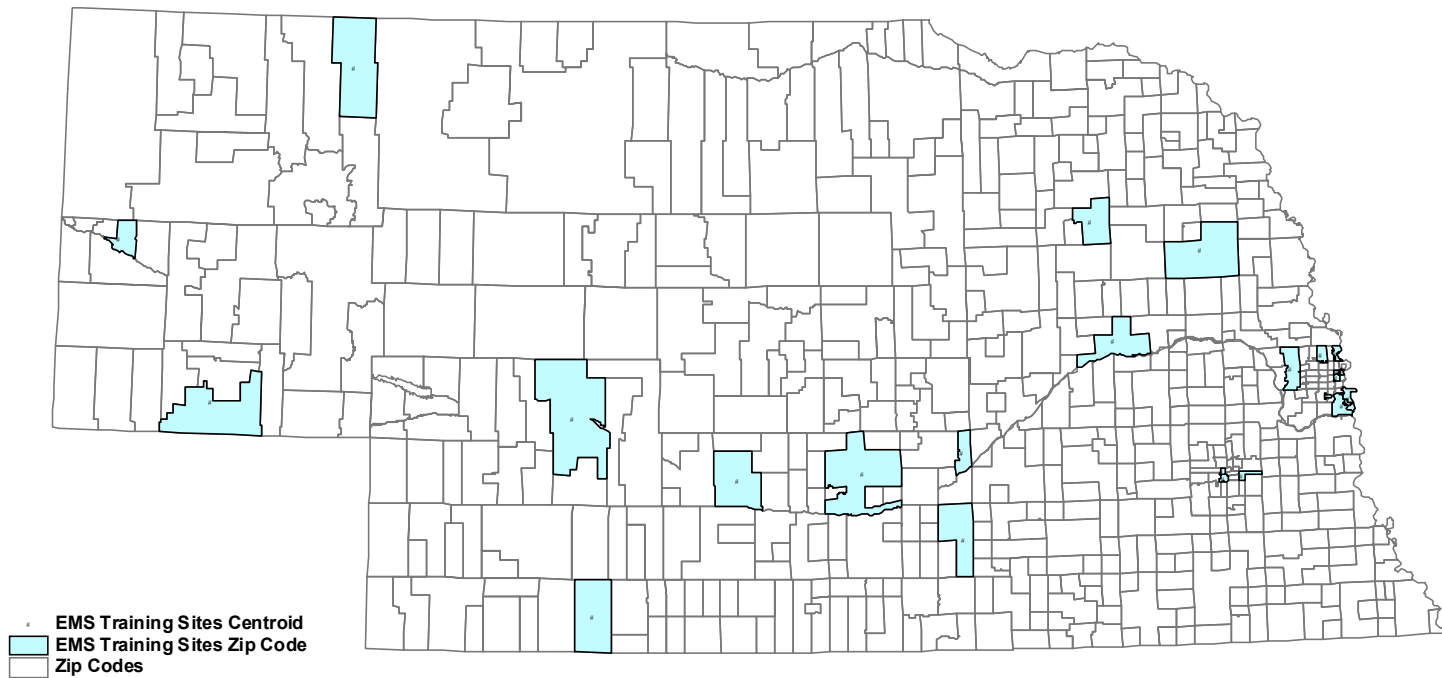


Source: NHHSS, 2001



EMS Resources - Map #12

EMS Training Sites



• EMS Training Sites Centroid
■ EMS Training Sites Zip Code
□ Zip Codes

Source: NHHSS, 2001

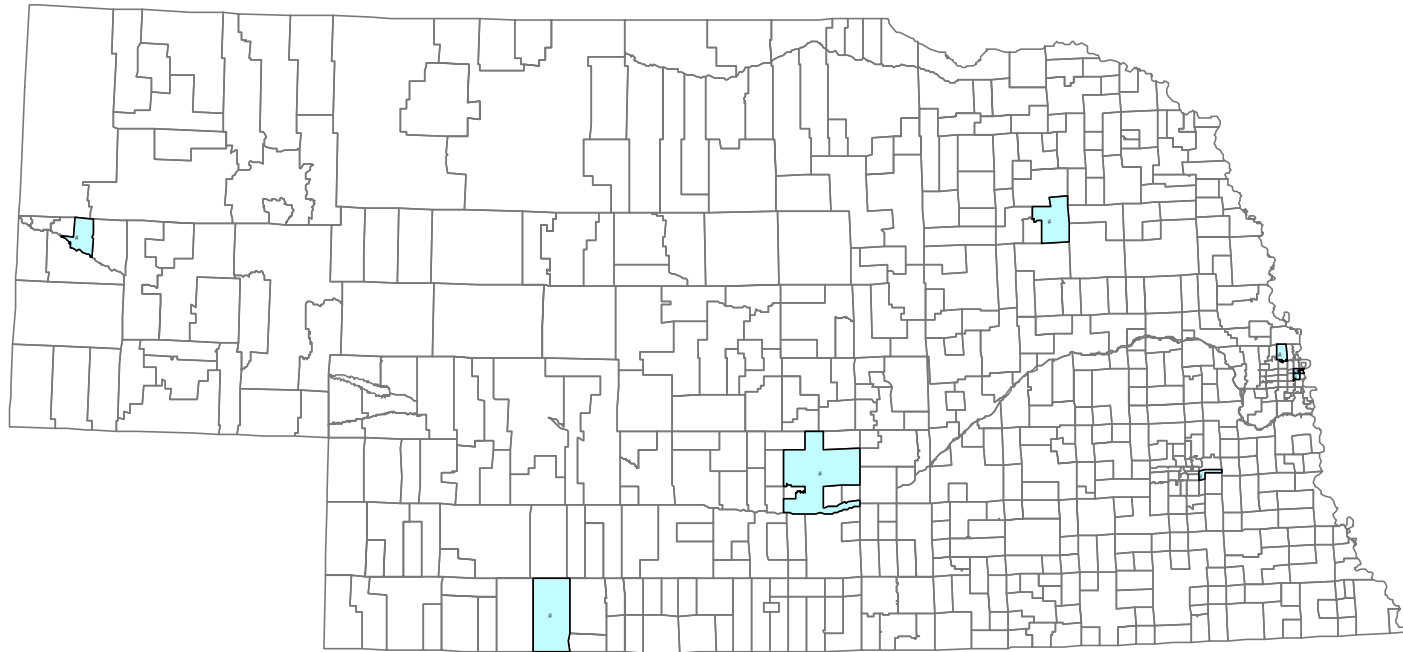
(Note: Locations are zip code centroids, not exact locations)



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EMS Resources - Map #13

EMS ALS Training Sites



(Note: Locations are zip code centroids, not exact locations)

- ALS Training Sites Centroid
- ALS Training Sites Zip Code
- Zip Codes

Source: NHHSS, 2001

