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Assessing Risk for Loss of Pharmacy Services in Rural America

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Plum City, WI Population -611

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Rural Population and Workforce

- Roughly 21% of US population lives in rural communities[1]
- National ratios of pharmacists[2]
  - Rural areas – 66 pharmacists / 100,000 population
  - Overall – 78 pharmacists / 100,000 population

1. U.S. Census Data, 2000
2. Knapp K, et. al. JAPhA, 1999

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A Fragile Environment

- Challenges to the ability to deliver pharmacy services in rural areas
- Cumulative effects
  - 102 non-metro MN pharmacy closures since 1996 vs. 87 closures in seven-county metro[1]
  - Nine of 38 pharmacy closures in rural MN, resulted in a community with no local pharmacy access from 1996-1999.[2]

1. MN Dept of Health ORHPC 10/2003
2. Moscovice I, et. al. Rural Health Research Center, UMN, July 2001

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Impact to Rural Communities with Closure

- Loss of access point for medications and services of a pharmacist
  - Prescription claims decrease[1,2]
  - Travel distance increases[3]
  - Patient satisfaction decreases[2]
- Loss of a "Main Street" business
- Impact on delivery of health services
  - Loss of pharmacist services
  - Utilization of health services in other communities

1. Xiao H, et. al. Am J Manag Care, 2000
2. Sunderland VB, et. al. Aust and N Zeal Hlth Pol. 2006, 3:8
3. Xiao H, et. al. J Soc Admin Pharm, 2000

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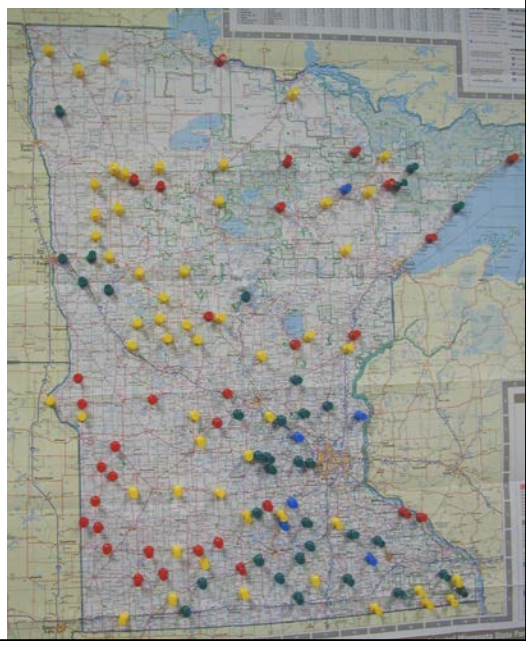
Rural Communities at Risk

Minnesota 2003

- **124 Rural "One-Pharmacy Towns"**
- **214,000 people in city limits**



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Project Purpose

Give government, colleges and schools of pharmacy, professional associations and/or other interested parties a framework to identify and target rural communities at greatest risk for loss of pharmacy services.

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Project Objectives

- Identify factors that indicate heightened risk for loss of pharmacy services in rural communities.
- Develop an assessment tool that prospectively and comparatively identifies rural communities potentially at risk.
- Demonstrate the application of the assessment tool
- Map service areas of one pharmacy towns
- Determine how many patients will lose local access to pharmacy services and the pharmacist upon closure

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Methods – Risk Assessment Survey

- Survey developed from interview with rural pharmacy owners/managers, pharmacy sales consultants and faculty
- Survey pre-tested with 4 pharmacy owners
- Administered as a mail survey to pharmacists-in-charge in one pharmacy towns outside metropolitan areas (BOP database)
  - MN 2003 and 2006
    - N=124 and 126
  - AR, AZ, IA, ME, MS, MT, NC, WY, WV in 2008
    - N=571

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Methods – Risk Assessment Survey

- Survey responses assigned a weighted score
  - Positive and negative points assigned
  - Summed to give a cumulative risk score
- Quartile Analysis

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What Factors Would Impact Successful Succession in Rural Pharmacies?

- Desired years to ownership transition
- Gross revenue
  - $≥1.5M for owner/operator
  - $≥2.5M for absentee owner
  - Average sale price, $3.5M
  - Most requests for ≥$3M
  - ≥95% from Rx Dept
- Is it staffed appropriately?

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What Factors Would Impact Successful Succession in Rural Pharmacies and Increase Rural Risk?

- Presence of health care services
- Distance to nearest community with pharmacy services

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Question Categories for Rural Pharmacy Risk Index

Community Dynamics (4 Questions)

- Distance to Next Nearest Pharmacy

Ownership Analysis (7 Questions)

- Owner's Ideal Number of Year's to Sale of Pharmacy

Prescription Revenue (3 Questions)

- Revenue from Prescriptions

Pharmacy Workforce (7 Questions)

- Recruitment for Full-time Pharmacist Employment

Rural Health-System Analysis (8 Questions)

- Primary Care Clinic Access

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Example of Scoring Contributing to Risk Score

Respondents to the survey were asked to report their *Total Revenue* from all pharmacy sales. Responses to this question were assigned points as follows:

- <$1.5M = +2
- $1.5 – $2.5M = +1.5
- $2.5M – 3.5M = +1
- >$3.5M = 0

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MN Closures 2003-2008

- Nine closures resulting in no local pharmacy and pharmacist access since August 1, 2003
- Seven of nine responded to survey in 2003 and/or 2006

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MN Closures 2003-2008

Town	Risk Score	Risk Quartile	Pop.	Owner Type	Yrs to retire	Nearest Rx	Rx Dept. Revenue
1-'06	3	3	1200	Corp.	9	16	<$1.5M
1-'03	4	3	1200	Corp.	9	16	<$1.5M
2-'06	8	1	1300	Corp	0	20	<$1.5M
2-'03	4.5	3	1300	Corp.	0	20	<$1.5M
3-'06	6.5	1	2300	Corp.	7	10	$2.5-3.5M
4-'03	10.5	1	400	Sole	-6	30	<$1.5M
5-'03	9	1	1200	Corp.	2	28	<$1.5M
6-'03	8.5	1	2400	Corp.	0	12	<$1.5M
7-'03	10.5	1	600	Sole	0	8	<$1.5M

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2008 Results

- 571 One-pharmacy towns
  - 6 surveys returned undeliverable
- 214 responses (37.9%)
  - ME 11/57 (19.3%)
  - WV 17/74 (23%)
  - MS 16/55 (29.1%)
  - MT 15/45 (33.3%)
  - NC 39/105 (37.1%)
  - AZ 9/22 (40.9%)
  - IA 68/132 (51.5%)
  - AR 35/66 (53%)
  - WY 6/9 (66.7%)

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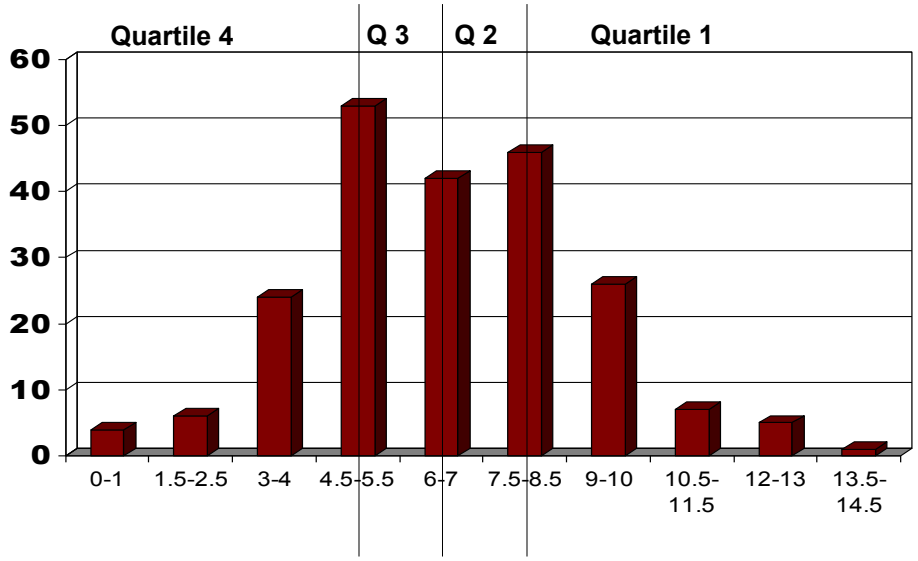
2008 Risk Scores



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Average = 6.57, Median =6.5

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2008 Demographics

- Ownership Type
  - Sole Ownership – 109
  - Partnership – 45
  - Corporation – 43
  - Chain – 25
  - Owner a pharmacist – 183
  - Owner is PIC - 143

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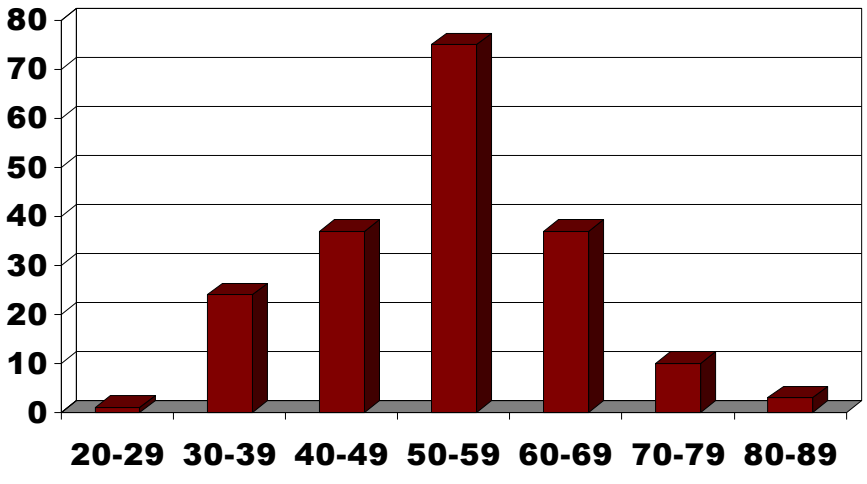
Primary Owner Age



Average = 53.3, Median =53

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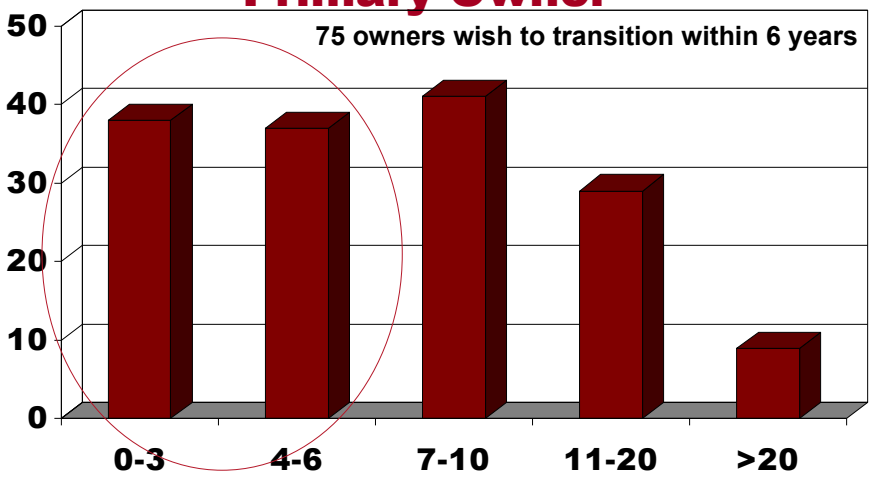
Years to Desired Transition Age Primary Owner



Average = 8.6 yrs, Median = 7 yrs

Prescriptions Dispensed and Revenue

- Average Rx's/day = 129.3
- Revenue
  - <$1.5M = 6
  - $1.5-2.5M = 75
  - $2.5-3.5M = 37
  - >$3.5M = 9
  - 71 generate >95% of revenue from Rx Dept.

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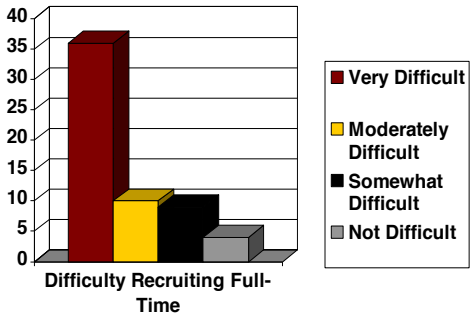
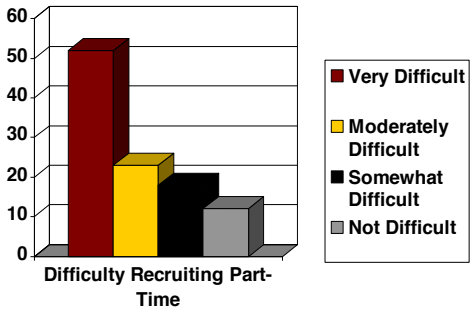
Difficulty Recruiting Staff Pharmacists in Rural Communities

How difficult has it been to recruit full-time staff pharmacists in the last 5 years?



How difficult has it been to recruit part-time staff pharmacists in the last 5 years?



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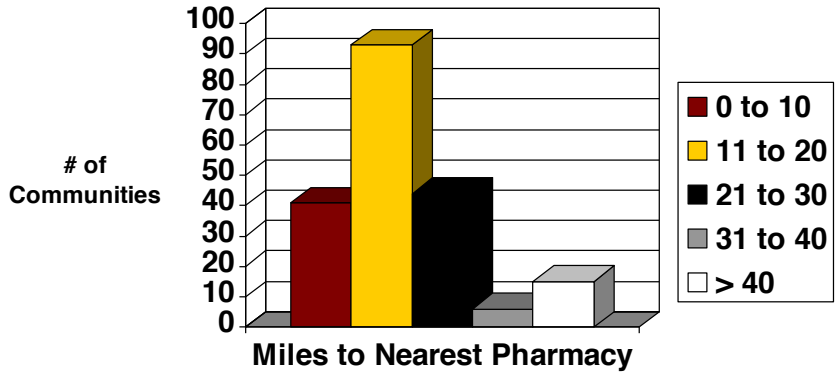
Reported Distance to Next Nearest Community with a Pharmacy



(Avg. = 19.4 miles)

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Health Care in One-Pharmacy Communities

- 198 medical clinics in 214 communities
- 112 nursing homes
  - Average census = 56.6
  - 42 pharmacies provide ≥ 75% of prescriptions
  - 30 provide consultant services
- 56 hospitals
  - 35 with less than 25 beds
  - 20 pharmacies provide on average 13.3 hours of hospital services/week
- 49 have additional service agreements in communities

Summary of Observations

- Largely independently owned
- Pharmacist workforce is aging
- Many wish to transition soon
- Revenues and volume challenges
- Difficult to recruit when attempted
- Average distance to obtain prescriptions if pharmacy closed = 19 miles
- Impact is more than on local medication access

How many people will be impacted by one pharmacy town closure?

One Pharmacy Town Mapping

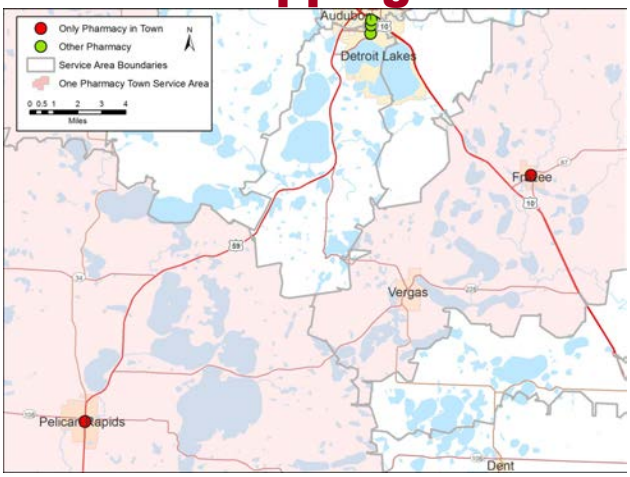
- 2,019 rural one pharmacy communities
  - 1,044 are >10 miles away from another pharmacy
  - Population = 1,667,386
    - 3% of rural U.S. population
- **Utilized NCPDP data to identify communities**
- **10-mile Euclidian buffer**
- **Census data for communities?**

Schambaugh-Miller, et. al., RUPRI Policy Brief, November 2007

Service Area Mapping

- Market area analysis is common in retail to assess supply and demand
- May utilize a variety of methods with GIS
  - Given that the distance of many of the one pharmacy towns we surveyed is greater than 10 miles, transport distance was chosen to define a service area

Service Area Mapping Methodology



Road Network
A road network was built using tools in Network Analyst. The roads data used in this study are from ESRI Streetmap, USA.

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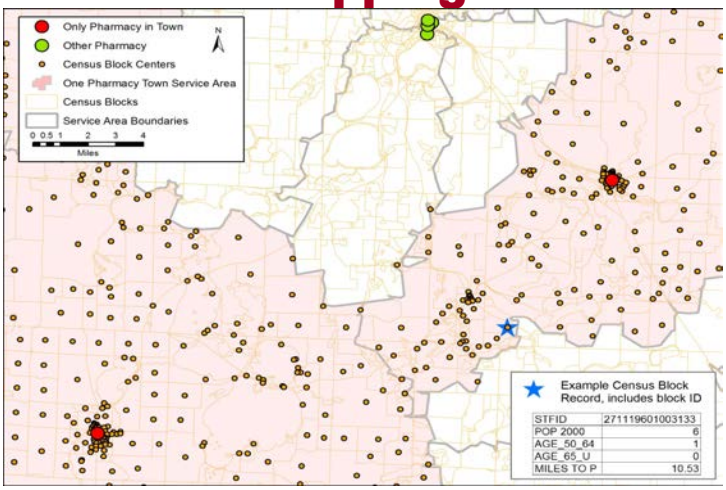
Service Area Mapping Methodology



Census Block Center Points

Overlayed service areas with census points to identify population and age-related demographics

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Minnesota Service Area Map

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Service Area Characteristics

State	RUPRI OPT Pop.[1]	MN COP OPT Census Pop.	Service Area Pop.	Service Area: Community
Arizona	37,648	75,431	236,967	3.14
Arkansas	31,178	216,272	358,314	1.66
Iowa	104,067	239,453	617,298	2.58
Maine	8,861	328,398	534,475	1.63
Minnesota	95,568	216,132	1,067,533	4.94
Mississippi	26,853	86,356	398,120	4.61
Montana	40,733	64,142	190,770	2.97
North Carolina	12,862	243,266	863,757	3.55
West Virginia	11,214	99,434	379,755	3.82
Wyoming	14,865	17,577	45,548	2.59
Totals	383,849	1,370,461	4,692,537	3.42

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1. Schambaugh-Miller, et. al., RUPRI Policy Brief, November 2007

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Service Area Characteristics

State	Pop 50-64	Pop>65	State's Sq. miles	Service Area Sq. miles	Sq. miles % of state
Arizona	39,021	31,896	113,635	40,682	35.8%
Arkansas	61,764	52,972	52,068	19,470	37.4%
Iowa	96,999	104,227	55,869	26,565	47.5%
Maine	93,543	76,493	30,862	22,745	73.7%
Minnesota	175,356	167,706	79,610	48,425	60.8%
Mississippi	60,830	49,779	46,907	12,675	27%
Montana	34,163	27,124	145,552	79,244	54.4%
North Carolina	146,533	108,936	48,710	11,854	24.3%
West Virginia	68,574	55,013	24,077	7,599	31.6%
Wyoming	8,275	6,435	97,100	22,663	23.3%
Totals	746,037	648,685	694,390	251,240	36.2%

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Additional Service Area Mapping Work

- Maximum and average travel distance for closure via road network mapping
- Comparison with RUCA, RUCC and population density designations for rural

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Summary of where we are…

- Most small rural communities are serviced by independent pharmacies
- Rural pharmacists are aging
- Independent owners would like to sell
- Communities are at-risk
- Greater populations than previously anticipated may be impacted

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Acknowledgements

- Anne Spenningsby, Research Assistant
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