

Rural-Urban Disparities in Pancreatic Cancer Stage of Diagnosis: Understanding the Interaction with Medically Underserved Areas

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INTRO

- High pancreatic cancer mortality (8% 5-year survival)
- Improves significantly with stage (32% 5-year survival for stage I)
- Disparities mostly show by race/ethnicity and insurance status
- Little known about disparities in stage of diagnosis by rurality and how lack of medical resources may drive disparities

METHODS

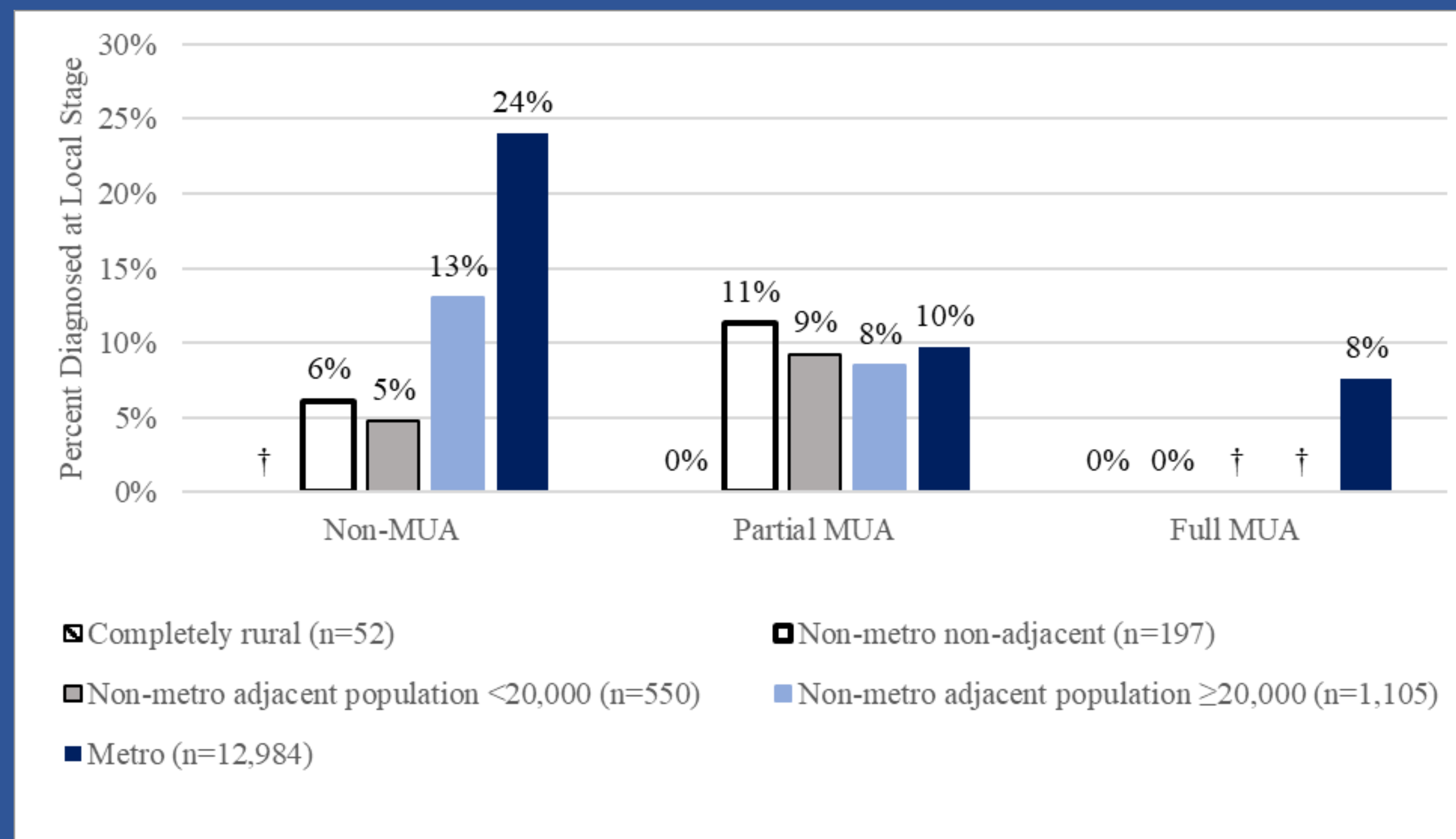
1. 2010-2016 Pennsylvania Cancer Registry data
2. Sample included adults diagnosed with malignant pancreatic cancer (exclude diagnosed at death).
3. Compared stage of diagnosis (i) local; ii) locoregional) by 5 categories of rurality: metro to completely rural.
4. Control for demographics, insurance, year
5. Control Medically Underserved Area (MUA) county - full, partial, none
6. Linear probability models supplemented with logistic models
7. Interaction models: 3-category rural status X 3-category MUA

RESULTS

- Significantly lower local and locoregional stage of diagnosis for completely rural patients
- Controlling for MUA attenuates results slightly
- In interacted models, MUA has minimal effect except within metro counties

No pancreatic cancer patients diagnosed at local stage in completely rural areas.

Limited impact of MUA on stage of diagnosis except in metro areas.



† No pancreatic cancer patients in this category of rurality and MUA because no counties in Pennsylvania are included in this particular category of rurality and MUA status.

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TABLE 1. Regression Estimates by Rurality

	Local Stage	
	Adjusted	Adjusted + MUA
Completely rural	-0.097*	-0.078
Non-metro non-adjacent	<0.001	-0.004
Non-metro adjacent population <20,000	-0.008	-0.010
Non-metro adjacent population ≥20,000	-0.009	-0.010

TABLE 2. Regression Estimates by Rurality X MUA

Variable	Local Stage	
	Unadjusted	Adjusted
Metro – non-MUA	(Reference)	(Reference)
Metro - partial MUA	-0.143*	-0.144*
Metro - full MUA	-0.164**	-0.167**
Non-metro adjacent - non-MUA	-0.149*	-0.148*
Non-metro adjacent - partial MUA	-0.153*	-0.153**
Non-metro adjacent - full MUA	a	a
Non-metro non-adjacent - non-MUA	-0.179*	-0.175*
Non-metro non-adjacent - partial MUA	-0.134*	-0.136*
Non-metro non-adjacent - full MUA	-0.240***	-0.241***

* p<0.05, ** p<0.01, *** p<0.001

Coefficients [95% CI]

Adjusted models control for age, sex, race, Hispanic ethnicity, insurance type, and year of diagnosis. Models are estimated separated for each of the 2 outcomes (i.e. local stage of diagnosis and local/regional stage of diagnosis).

^a This rurality and MUA category has no observations in the data due to no counties with this rural category and MUA status combination.

Limitations

- One state albeit 6th most populous
- Limited counties for each category of rurality and MUA status