

The Impact of the Collaborative Stage Transition on SEER Summary Stage SS2016: Interim Report

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Summary Stage

- Most basic way to describe how far a cancer has spread from its point of origin
 - In situ: “in place”; no penetration of basement membrane
 - Localized: confined to site of origin
 - Regional: direct spread to adjacent tissue/organs (RE) and/or involvement of regional nodes (RN).
 - Distant: Further contiguous spread; metastases to distant organs/tissues or distant nodes.
 - Unstaged: no information

SEER Summary Stage

- SEER historic stage has been used since 1973.
- In 2000, SEER Summary Stage was developed to take into account more modern staging concepts than in SEER historic or SEER Summary Stage 1977.
- Summary stage has historically been available for long term staging trends whereas AJCC changes more frequently.

Summary Stage 2016

- As the transition from Collaborative Stage (CS) to directly assigned TNM and stage occurs, what will happen to summary stage?
- Is there a way to build (recode) summary stage from the directly assigned T, N, and M and still maintain long-term trends?
- This feasibility project is dubbed Summary Stage 2016

Proposed SS2016

- Build a Summary Stage 2016 from the T, N, M for
 - Derived AJCC 7th ed. (2010-2015) based on CS
 - Derived AJCC 6th ed. (2004-2009) based on CS
 - Derived AJCC 3rd or EOD for 1988-2003
- Check compatibility of SS2016 to current SS2000 and SEER Historic stage (back to 1975)
- Explore options to adjust older data to better fit with Summary Stage derived from directly assigned TNM.

SS2016 Review

- Colon Example (excludes appendix, NET & GIST)
 - TNM differences over time
 - AJCC 7th T, N, M and SS2016
 - Comparison of SS2000 and SS2016
 - Extending the SS2016 definitions backwards in time
- Other examples as time permits
- Discussion of some issues

Colon: AJCC 7th vs. AJCC 6th for T

AJCC 7		AJCC 6th
T	Description	
TX	Primary tumor cannot be assessed	same
T0	No evidence of primary tumor	same
Tis	Carcinoma in situ: intraepithelial or invasion of lamina propria	same
T1	Tumor invades submucosa	same
T2	Tumor invades muscularis propria	same
T3	Tumor invades through the muscularis propria into pericorectal tissues	Subserosa mentioned
T4	Tumor directly invades other organs or structures and/or penetrates visceral peritoneum	similar
T4a	Tumor penetrates to the surface of the visceral peritoneum	No subcategory
T4b	Tumor invades or is adherent to other organs or structures	No subcategory

Colon: AJCC 7th vs. SS2000 for T

AJCC 7th	SS2000 Description	SS2000
Tis	In situ: Noninvasive; intraepithelial	In situ
Tis	(Adeno)carcinoma in a polyp or adenoma, noninvasive	In situ
Tis	Intramucosa, NOS	Loc
Tis	Lamina propria	Loc
Tis	Mucosa, NOS	Loc
Tis	Muscularis mucosae	Loc
T1	Polyp, NOS:	Loc
T1	Head of polyp	Loc
T1	Stalk of polyp	Loc
T1	Submucosa (superficial invasion)	Loc
T1	Confined to colon, NOS	Loc
T1	Localized, NOS	Loc
T2	Muscularis propria	Loc

Colon: AJCC 7th vs. SS2000 for T (con't)

AJCC 7th	SS2000 Description	SS2000
T3	Perimuscular tissue invaded	Loc
T3	Subserosal tissue/(sub)serosal fat	Loc
T3	Transmural, NOS	Loc
T3	Wall, NOS	Loc
T3	Extension through wall, NOS	Loc
T3	Invasion through muscularis propria or muscularis, NOS	Loc
T3	Adjacent tissue(s), NOS	Reg
T3	Connective tissue	Reg
T3	Fat, NOS	Reg
T3	Greater omentum	Reg
T3	Mesenteric fat	Reg
T3	Mesentery	Reg
T3	Mesocolon	Reg
T3	Pericolonic fat	Reg
T3 or T4b	Direct extension from different segments to specific organs	Reg

Colon: AJCC 7th vs. SS2000 for T (con't)

AJCC 7th	SS2000 Description	SS2000
T4a	Invasion of/through serosa (mesothelium) (visceral peritoneum)	Reg
T4b	Abdominal wall	Reg
T4b	Retroperitoneum (excluding fat)	Reg
T4b	Small intestine	Reg
T4b	Adrenal (suprarenal) gland	D
T4b	Bladder	D
T4b	Diaphragm	D
T4b	Fallopian tube	D
T4b	Fistula to skin	D
T4b	Gallbladder	D
T4b	Other segment(s) of colon via serosa	D
T4b	Ovary	D
T4b	Uterus	D
T4b	Any other direct extension listed under distant	D

Colon: AJCC TNM 7 Stage & SS2016- partial table

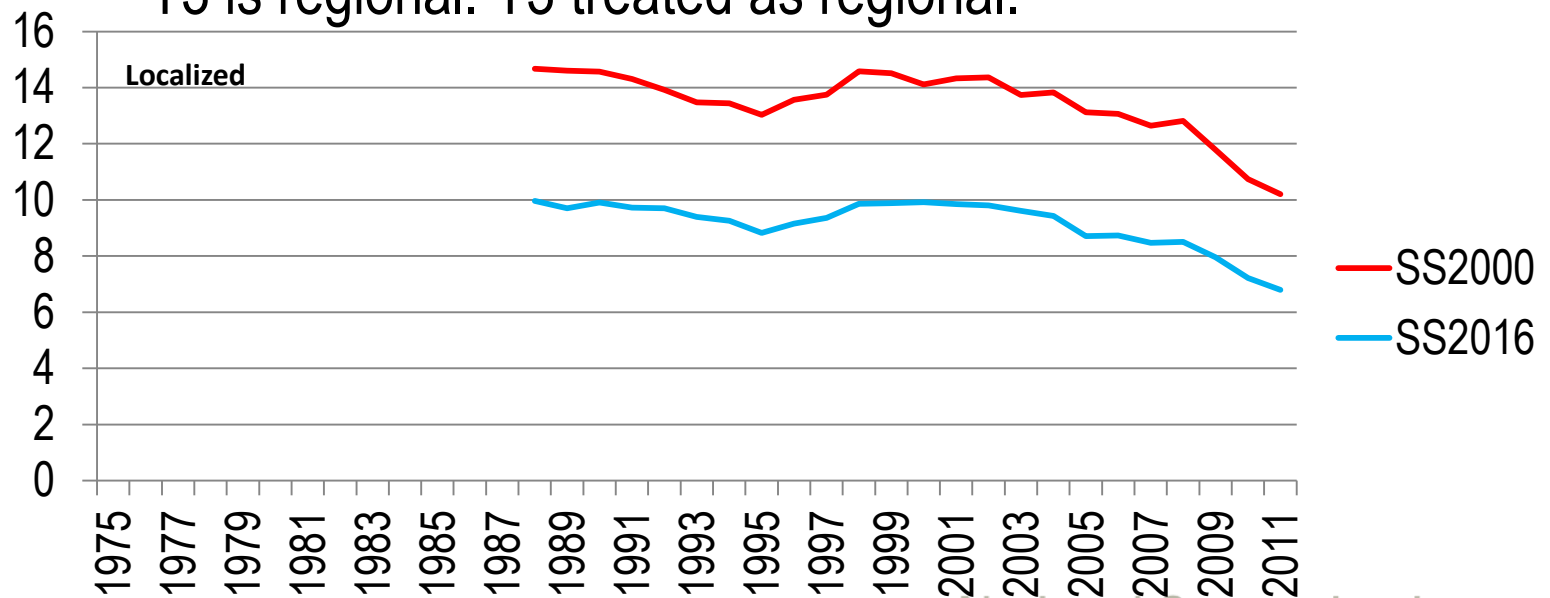
T	N	M	Summary Stage 2016
T0	N0	M0	ERROR
T0	N1a	M0	R
Tis	N0	M0	IS if /2; L if /3
Tis	N1a	M0	ERROR if /2; R if /3
T1	N0	M0	L
T1	N1a	M0	R
T2	N0	M0	L
T3	N0	M0	R
T4a	N0	M0	R
T4b	N0	M0	R
T4NOS	N0	M0	R
TX	N0	M0	U
TX	N1a	M0	R

Divided by behavior code

Colon

Major differences between SS2000 and SS2016

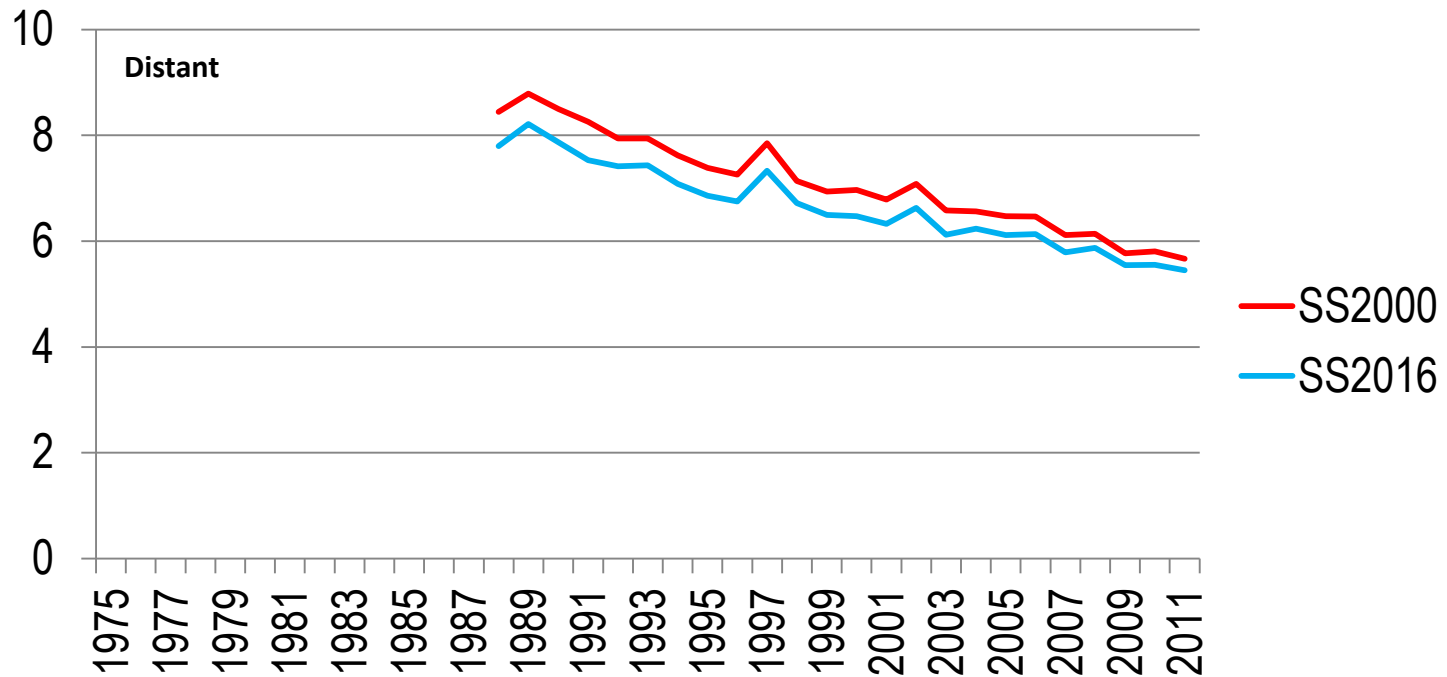
- **Extension thru wall; subserosal tissue/fat; perimuscular tissue invaded; invasion through muscularis propria**
- SS2000 – localized
- AJCC 6th and 7th, grouped with T3 (invades through the muscularis propria into pericolorectal tissues) and most of T3 is regional. T3 treated as regional.



Colon

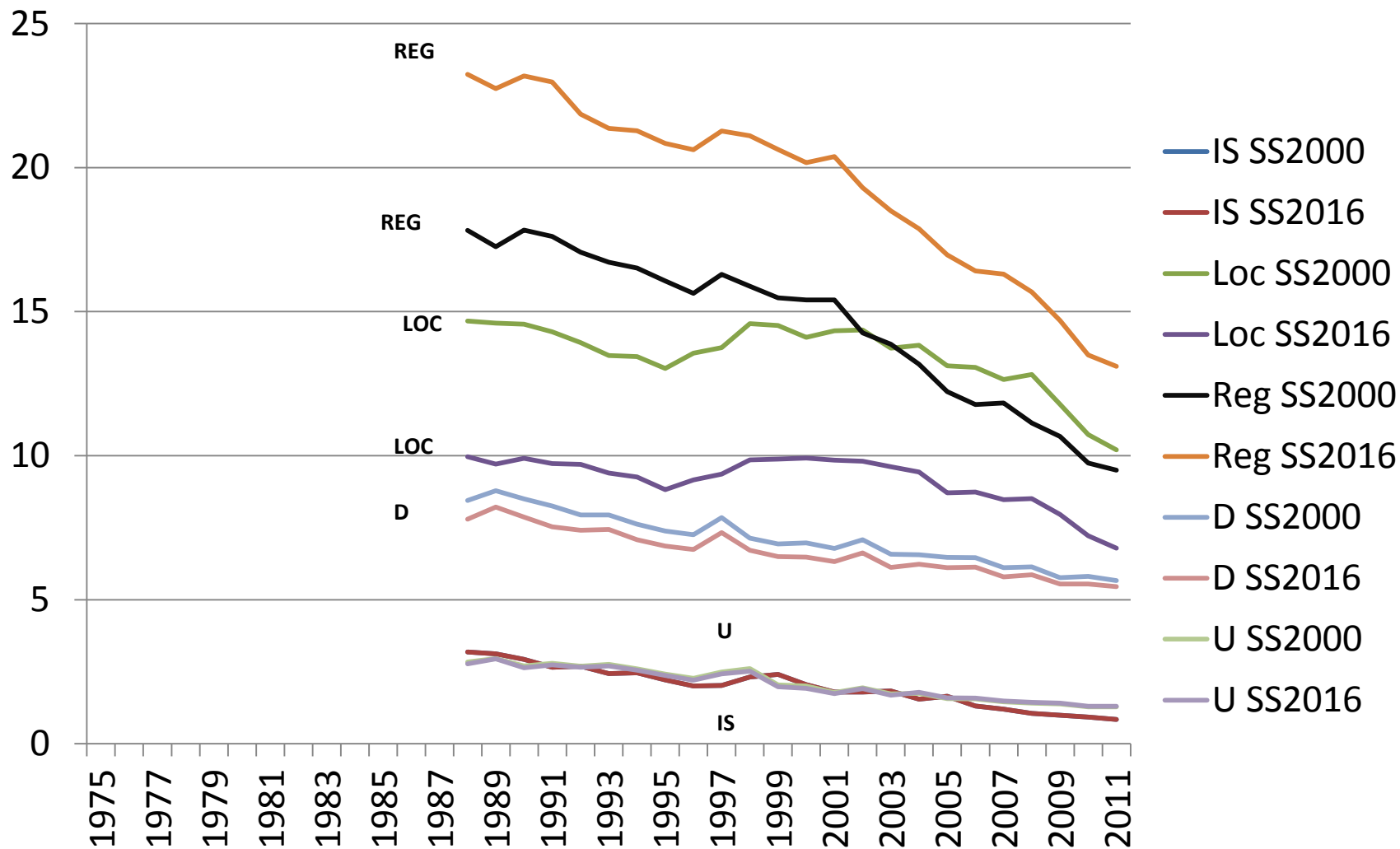
Major differences between SS2000 and SS2016 (con't)

- **Direct extension to organs**
- SS2000 – regional or distant depending on the segment of the colon and the organ
- AJCC 6th and 7th - T4, not M1. T4 is Regional, not Distant



Colon: SS2000 vs. SS2016

Rate per 100,000



Source: SEER 9 areas, NCI

SS2000 not revised

Colon

Differences between SS2000 & SS2016

- SS2016 is fairly inflexible: e.g. T4 either goes to regional or distant; part of it can't go to regional and part to distant.
- SS2000 can't be changed if it was directly assigned based on the medical record.
- For colon, there would be major shift in LRD when SS2016 begins.
- Some schemas/sites: small differences in SS2000 and SS2016.
- Other schemas/sites: large differences.

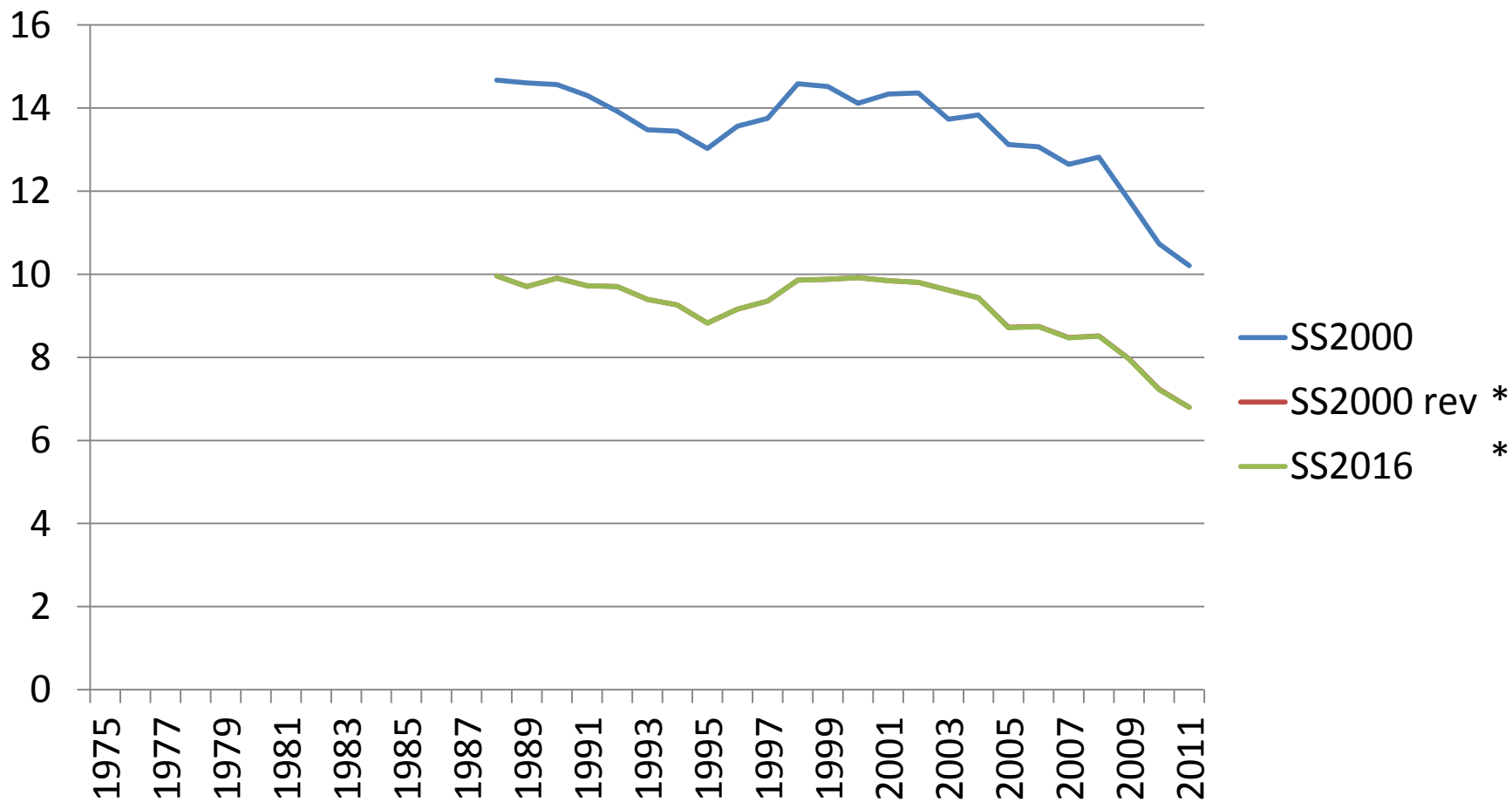
Colon

Solving the differences between SS2000 & SS2016

- SS2016 is fairly inflexible
- Consider using the definitions of SS2016 and applying them to CS (2004-2015) (and for SEER EOD (1988-2003)). For simplicity, this is labeled as 'SS2000 rev'
- Could this approach decrease the differences?

Colon: SS 2000 vs. SS2016 Localized

Rate per 100,000

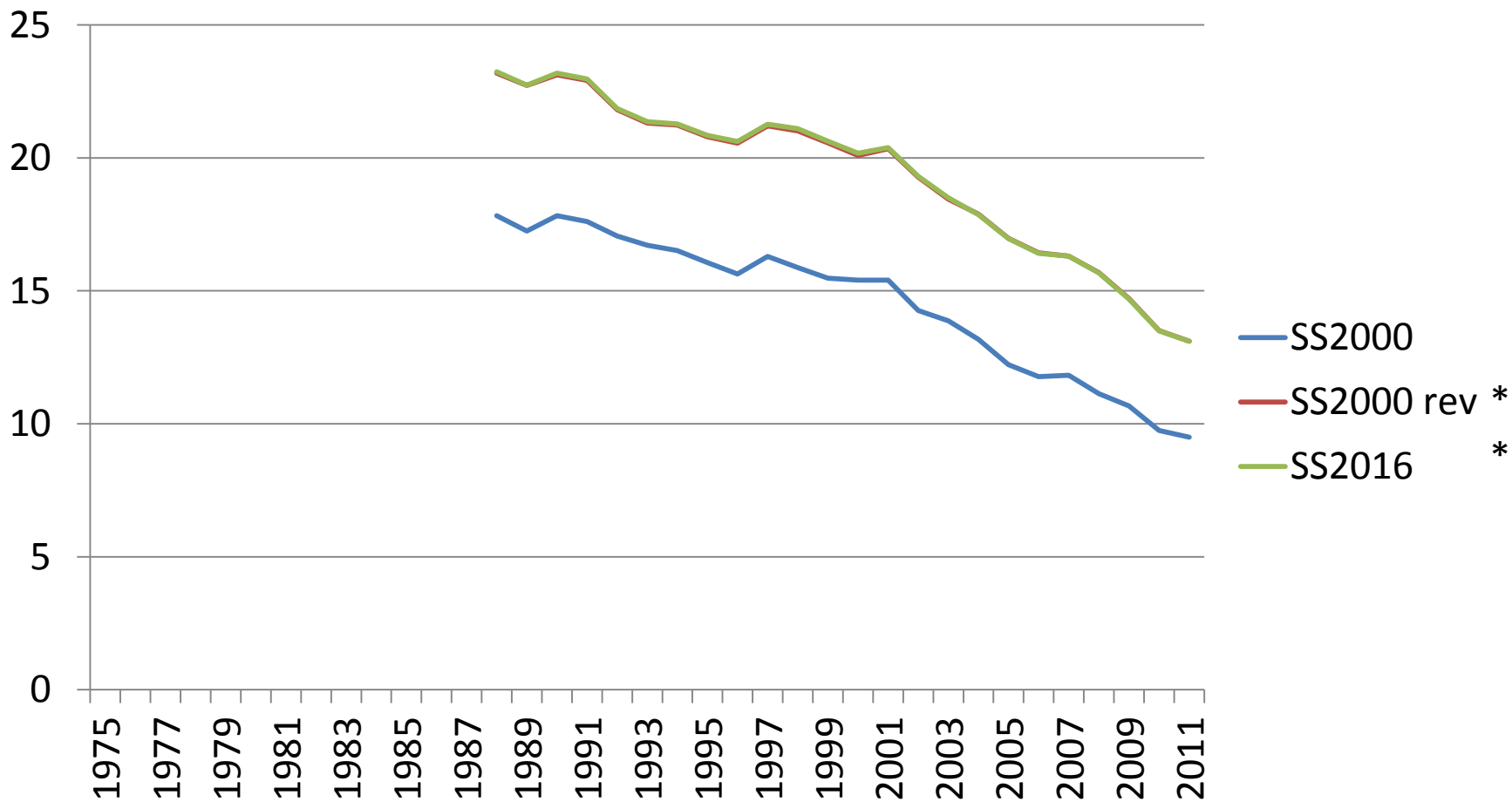


Source: SEER 9 areas, NCI

* Lines on top of each other

Colon: SS 2000 vs. SS2016 Regional

Rate per 100,000

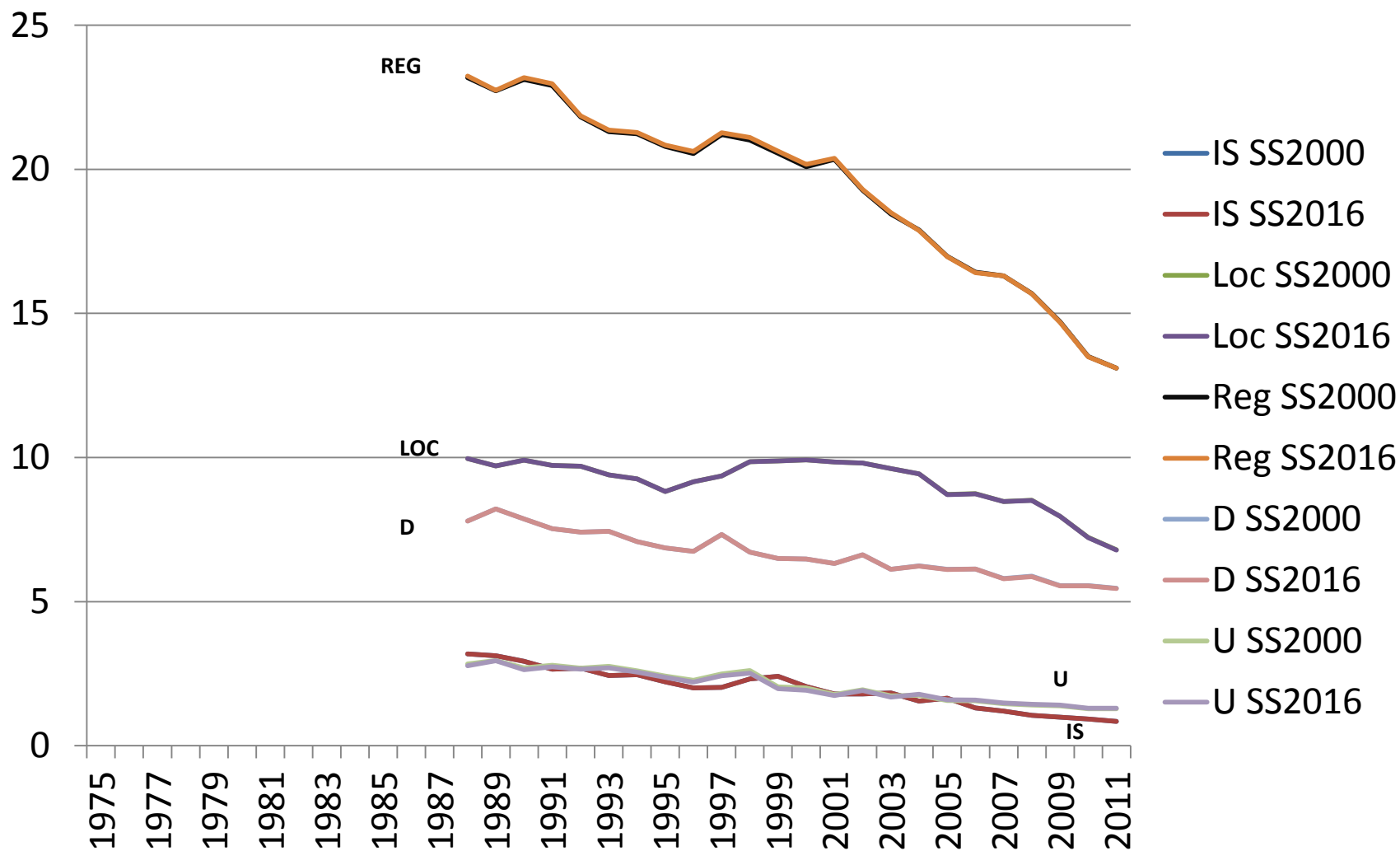


Source: SEER 9 areas, NCI

* Lines on top of each other

Colon: SS2000 revised vs. SS2016

Rate per 100,000

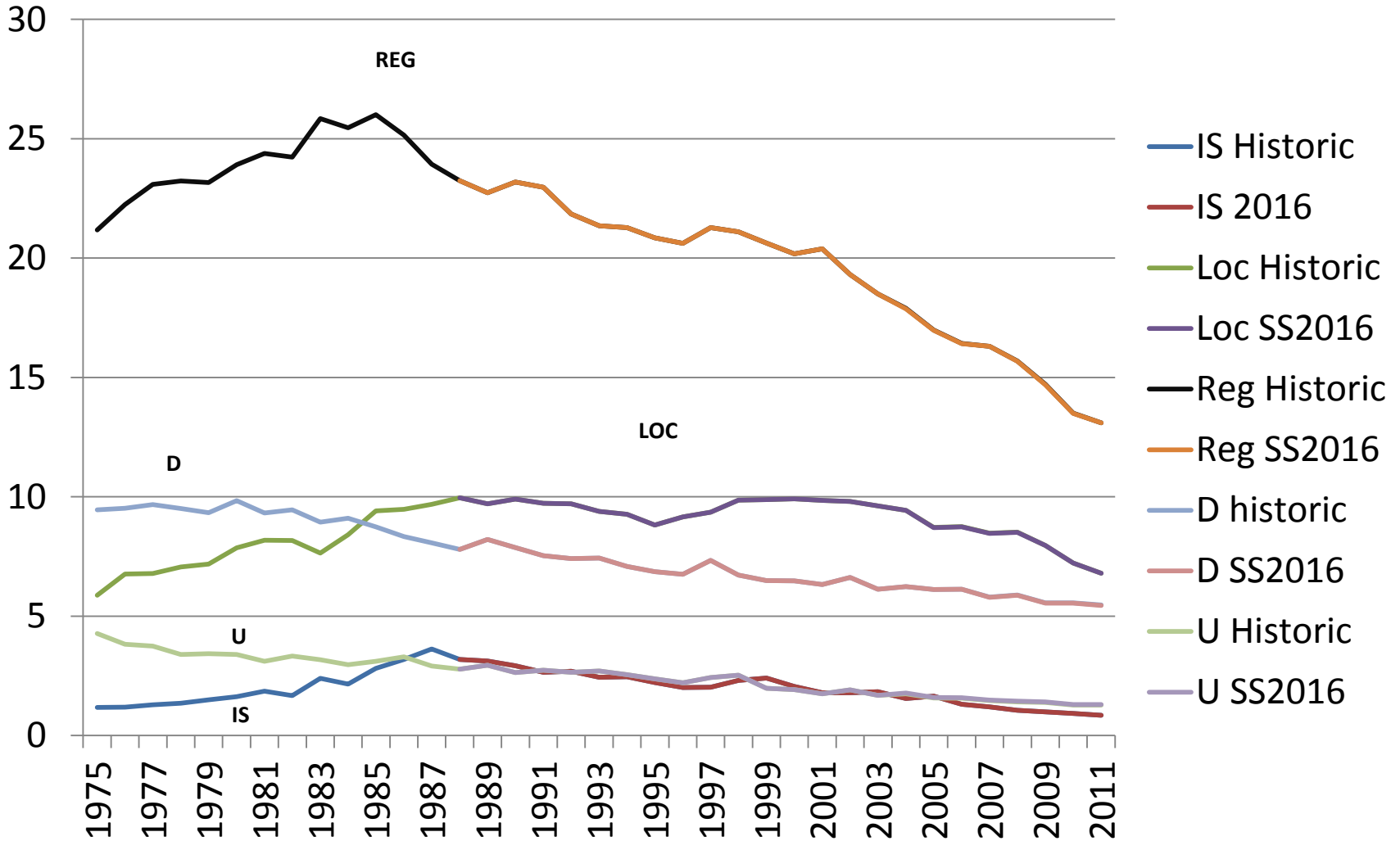


Source: SEER 9 areas, NCI

SS2000 revised: Extension thru wall, etc. changed from localized to regional & direct extension to regional.

Colon: Historic revised vs. SS2016

Rate per 100,000



Source: SEER 9 areas, NCI

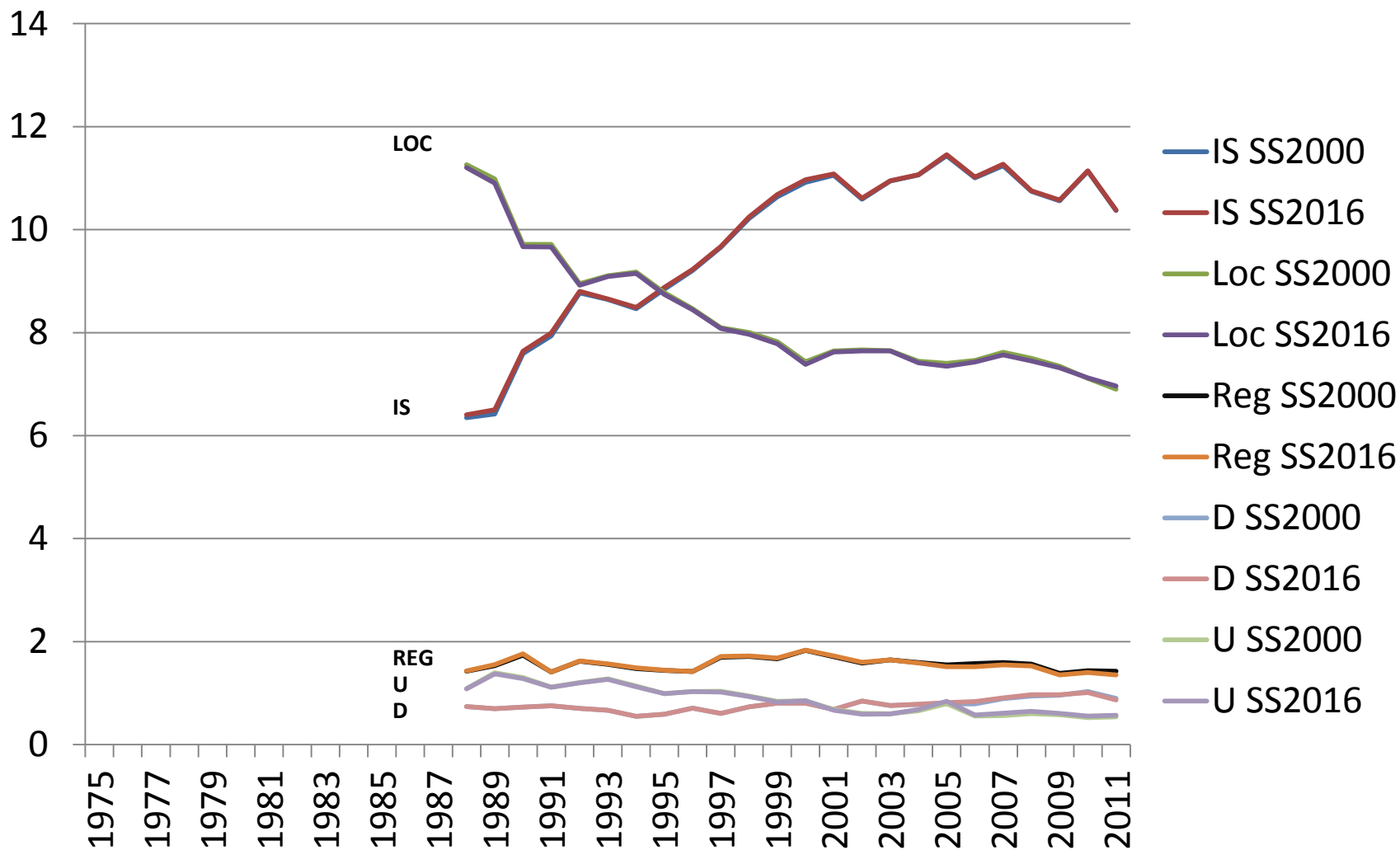
Historic revised: Serosa, serosal tissue, inv muscularis propria, etc. changed from localized to regional & direct extension regional.

SS2016 Review

- Other schemas/sites as time permits
 - Bladder
 - Breast
 - Cervix

Bladder: SS2000 vs. SS2016

Rate per 100,000

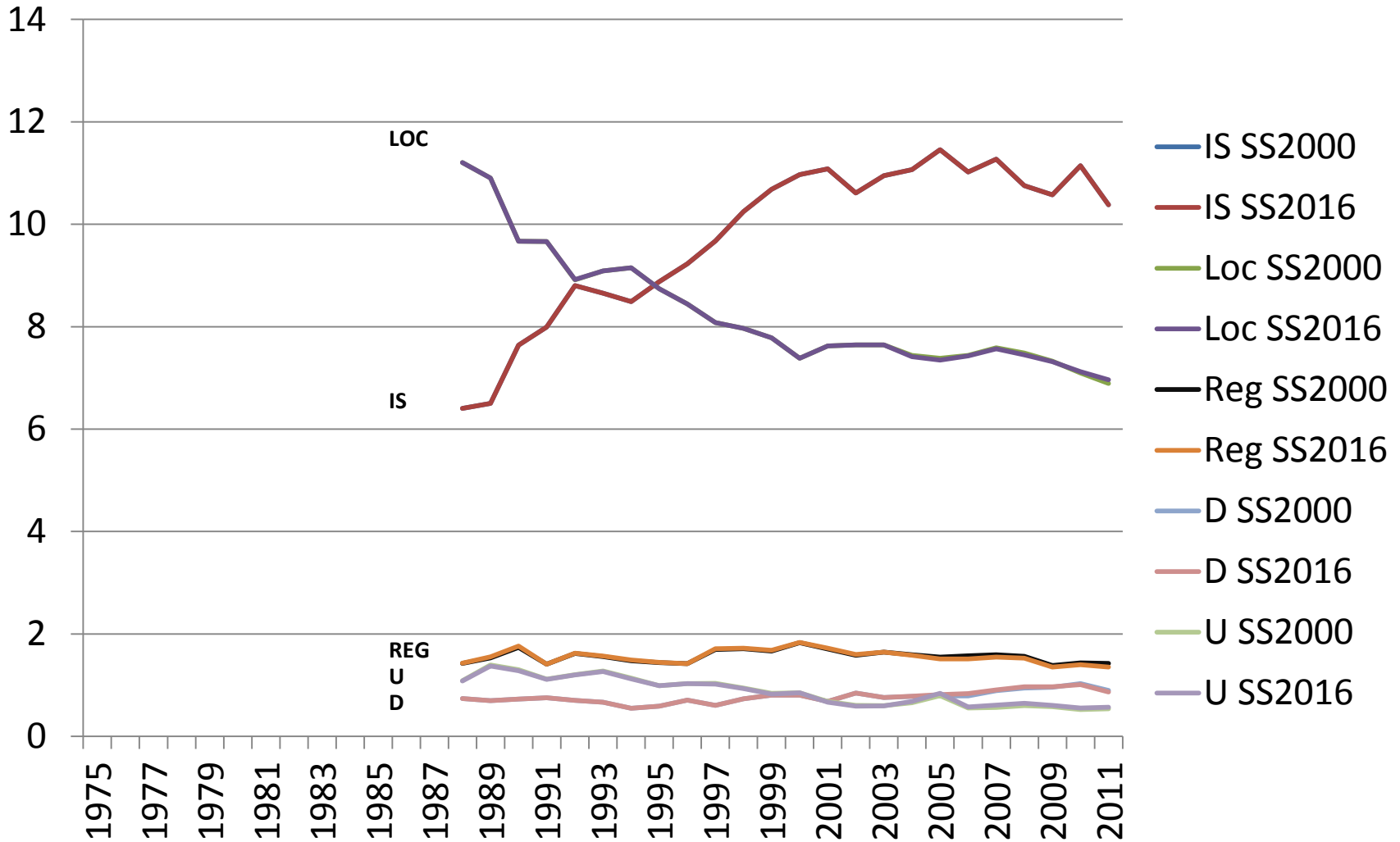


Source: SEER 9 areas, NCI

SS2000 not revised

Bladder: SS2000 revised vs. SS2016

Rate per 100,000

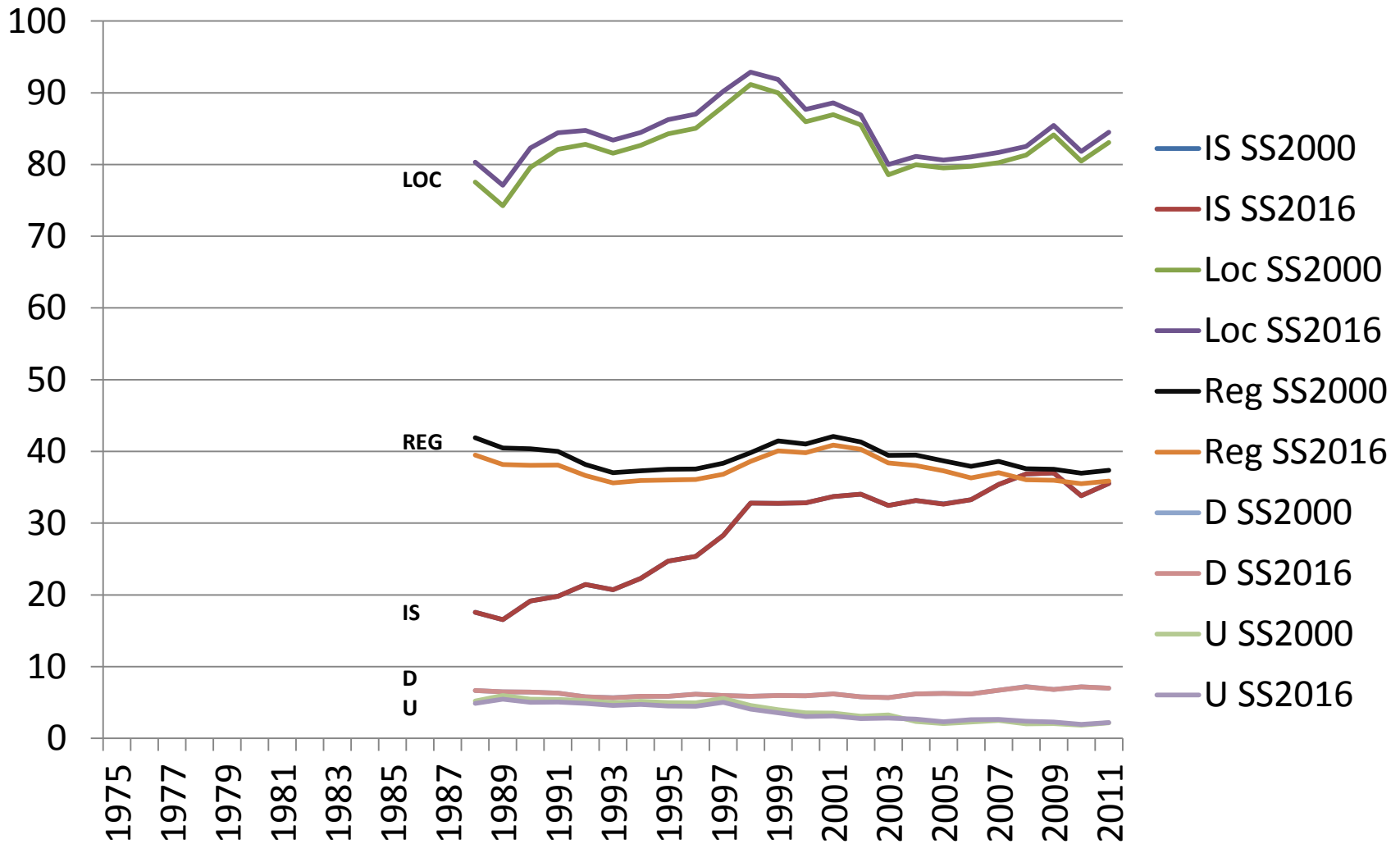


Source: SEER 9 areas, NCI

SS2000 revised

Breast (female): SS2000 vs. SS2016

Rate per 100,000



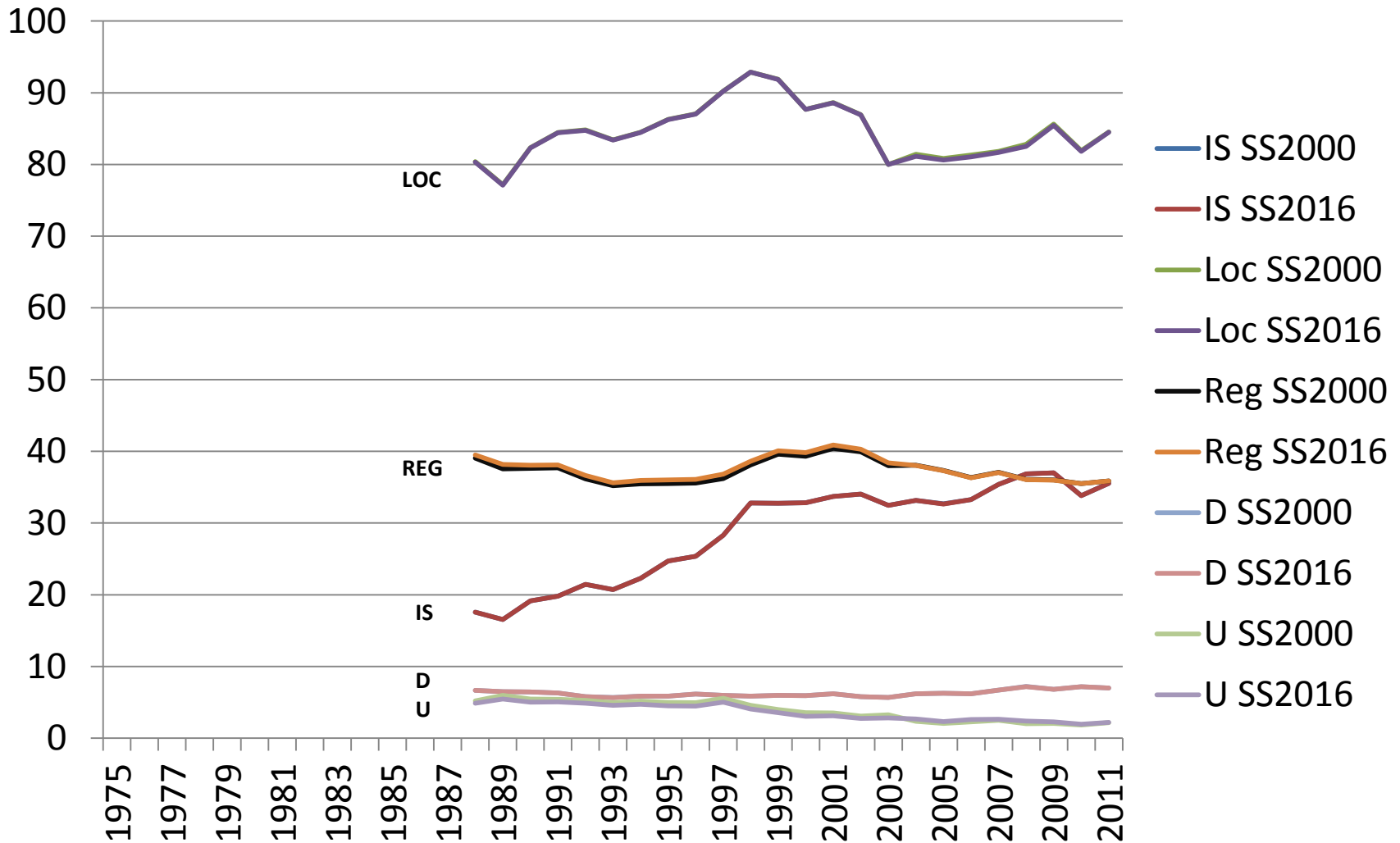
Source: SEER 9 areas, NCI

SS2016: subcutaneous & pectoral fascia is localized; inflammatory is regional. TXN0M0 – loc.

SS2000 not revised: subcutaneous tissue & pectoral fascia are in regional - not localized; inflammatory is reg.

Breast (female): SS2000 revised vs. SS2016

Rate per 100,000



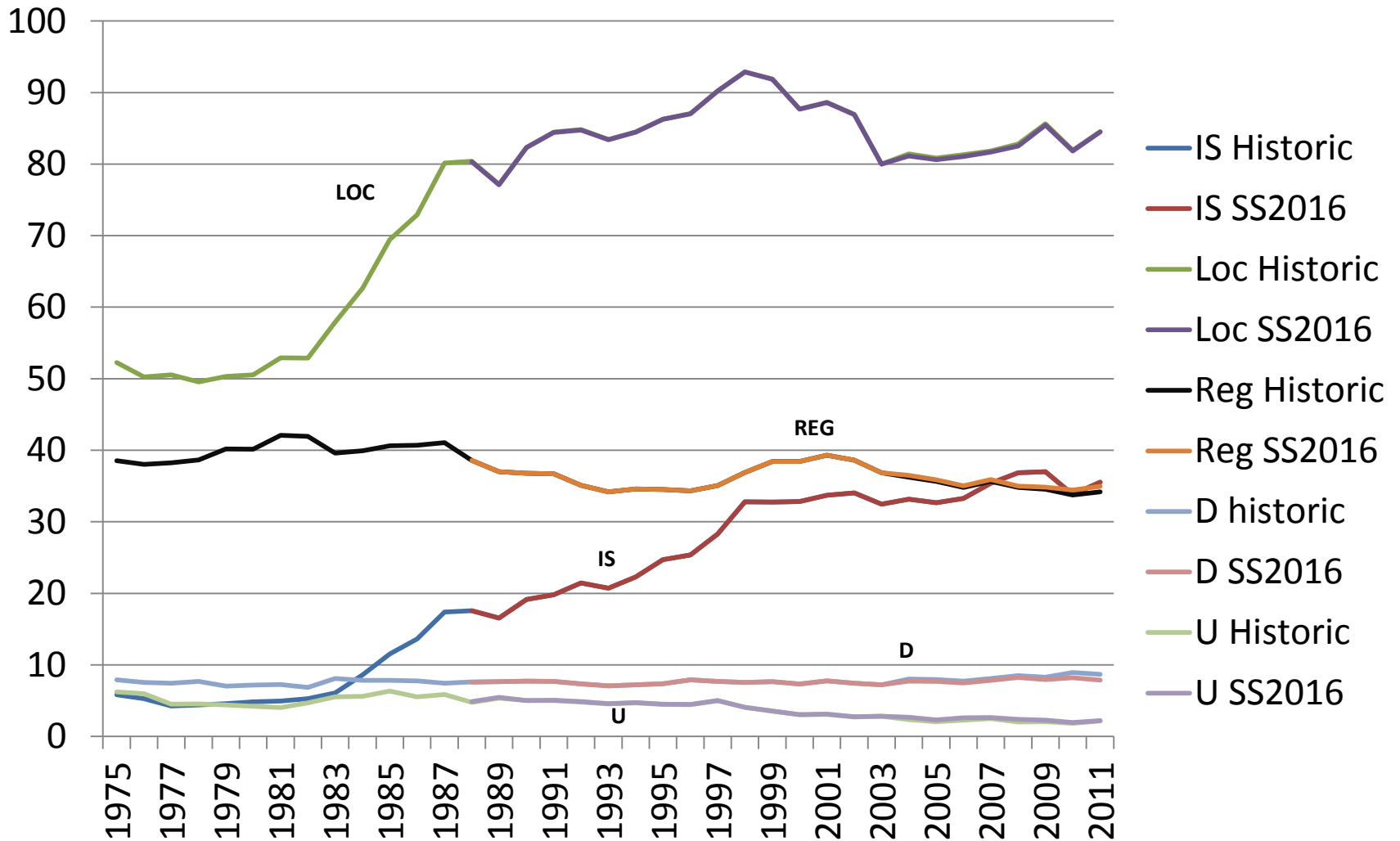
Source: SEER 9 areas, NCI

SS2016: subcutaneous & pectoral fascia in localized; inflammatory (T4d) is in regional. TXNOMO – loc.

SS2000 revised: subcutaneous tissue & pectoral fascia moved from regional to localized.

Breast (female): Historic revised vs. SS2016 revised

Rate per 100,000



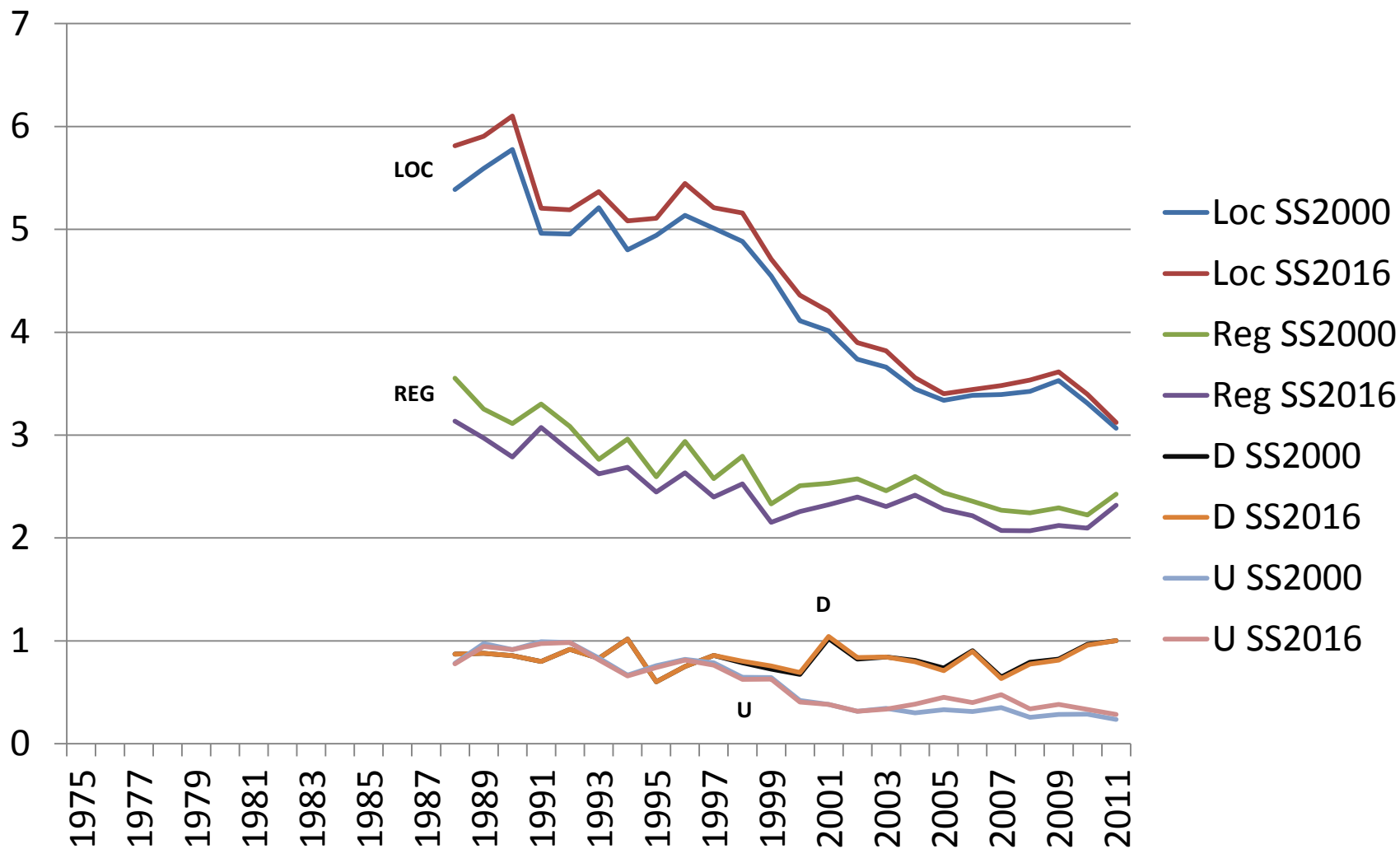
Source: SEER 9 areas, NCI

SS2016 revised: inflammatory (T4d) is in regional; subcut. & pectoral fascia in localized.

Historic revised: subcutaneous tissue & pectoral fascia from regional to localized.

Cervix (female): SS2000 vs. SS2016

Rate per 100,000

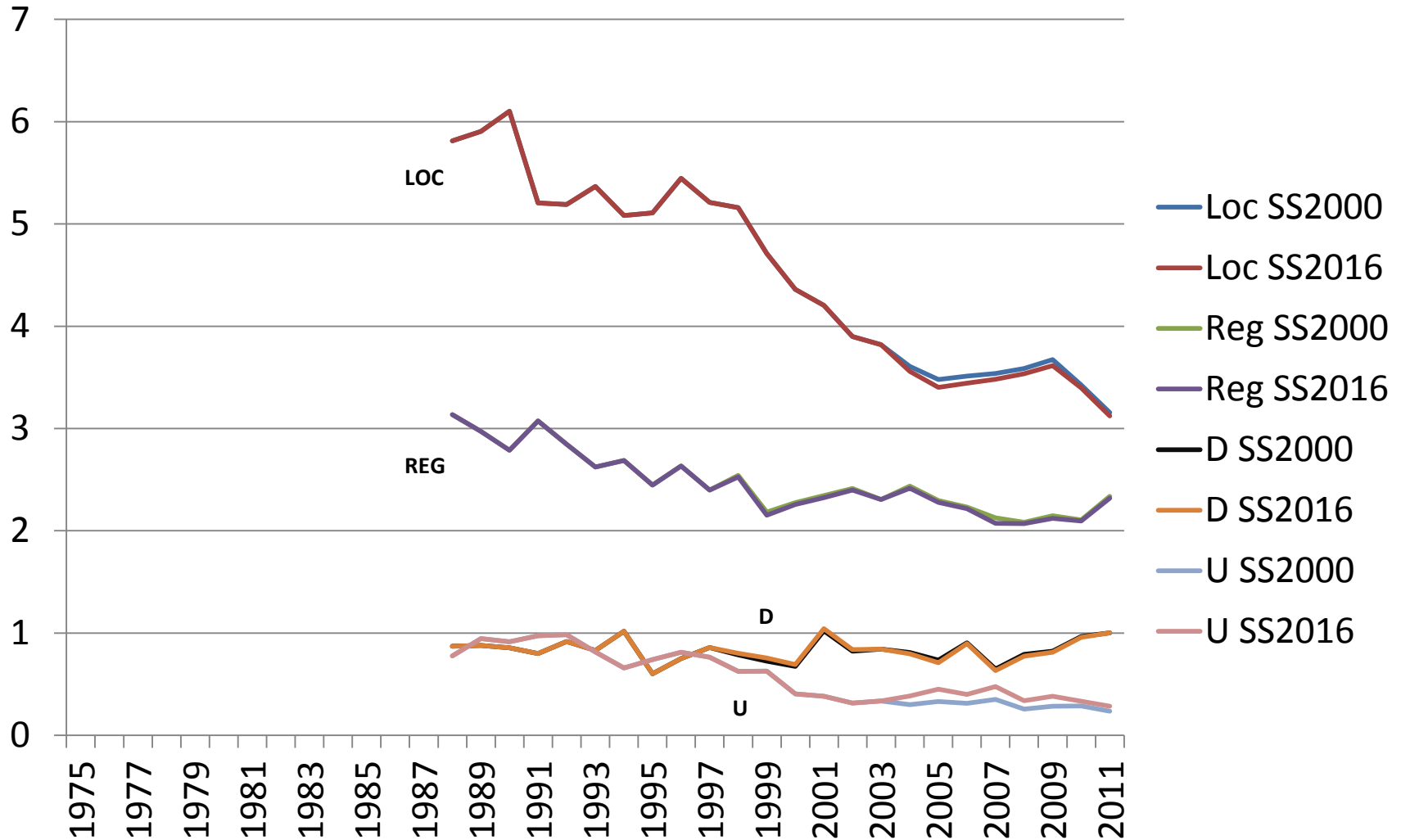


Source: SEER 9 areas, NCI

SS2000 not revised

Cervix (female): SS2000 revised vs. SS2016

Rate per 100,000

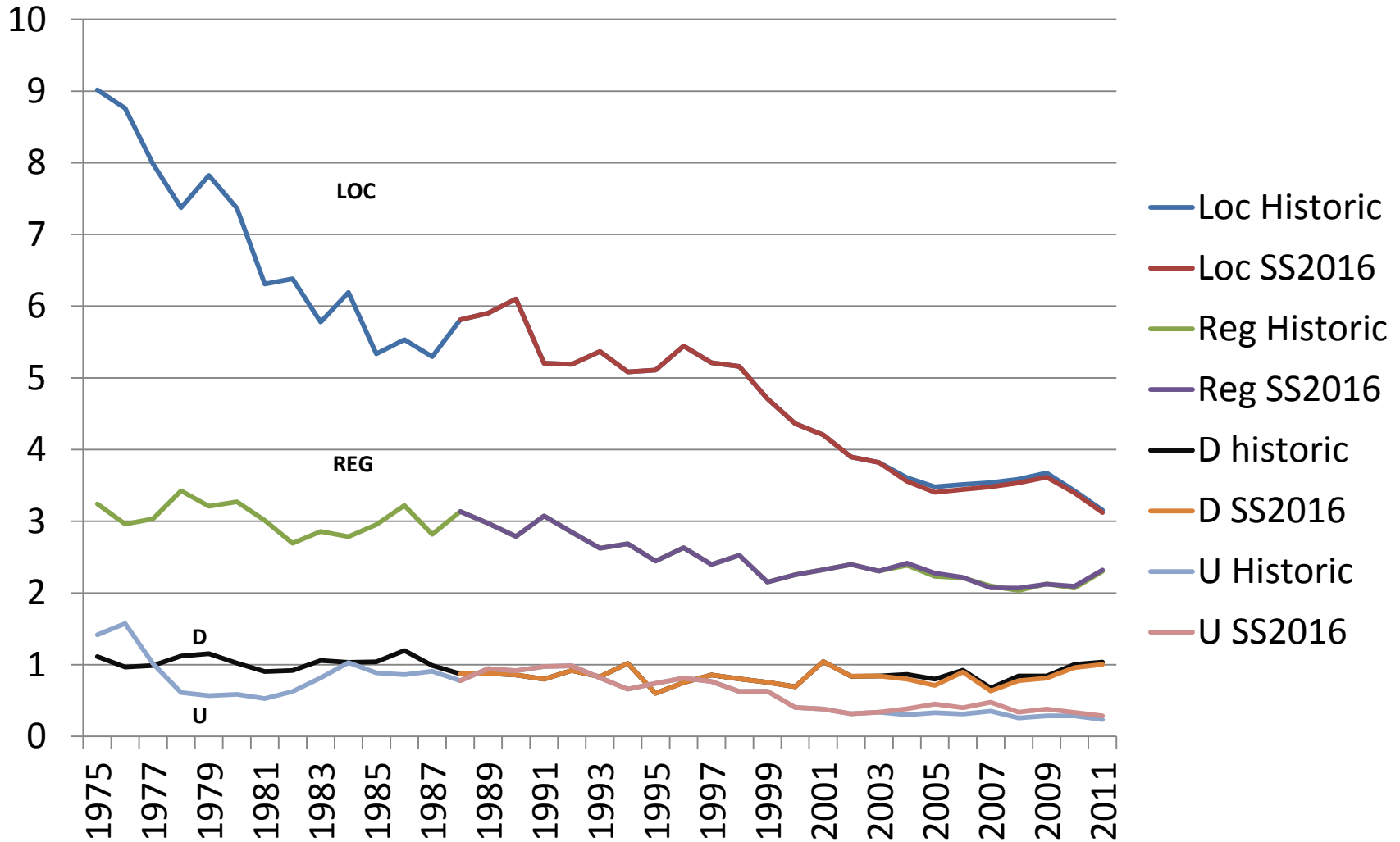


Source: SEER 9 areas, NCI

SS2000 revised: inv corpus from regional to localized & inv bladder/rectal mucosa in regional.

Cervix (female): Historic revised vs. SS2016 revised

Rate per 100,000



Source: SEER 9 areas, NCI

Historic revised: inv corpus from regional to localized & inv bladder/rectal mucosa from distant to regional.

SS2016 Discussion & Summary

- Discussion of issues – How does one fit a round peg into a square hole?
- If one can apply SS2016 definitions backwards in time, one has one opportunity to create consistent trends compatible with SS2016 historically.
 - It seems to work for most schemas because enough detail was collected in EOD and CS to be able to regroup Summary Stage 2000.

Documentation – SS2016 Manual?

- Certain concepts defy traditional summary stage, e.g. involvement of the pectoral fascia in breast being moved to localized. Should the nomenclature be changed to SS1, SS2, or SS3 to distinguish that it might not be the traditional concept of localized, regional, and distant?
- Registrars would need to adjust to these concepts. The SS2016 does follow more closely with what AJCC has grouped together.
- A manual would have to be written if directly assigned SS2016 is needed. Some localized cases are TX in AJCC 7th because size is unknown. Could one add a localized category in the manual for these cases where the overwhelming majority of TXN0M0 are localized in SS2000?

NOS codes:

For example T2 is used when can't distinguish T2a from T2b

- Will the direct assignment of T, N, and M allow for a T2 when one can't distinguish a T2a from a T2b? Or does it have to go to TX?
- In derived AJCC 6th and 7th, NOS is used when one can't assign a more specific category.
- Many times these NOS categories can be staged if they go to the same stage. How should T2 (T2NOS) be handled if T2a goes to a different stage than T2b?

Future Development for 2016 based on current data

- Some sites/schemas don't have a T, N, M for AJCC 7th
- T, N, M is not defined for all histologies. For many schemas it is a very small proportion of cases, but for a few it is a high proportion that don't have T, N, or M because of histology.
- Solutions could include:
 - assigning to unstaged,
 - directly assigning SS2016, or
 - coding some simplified extension, lymph node, mets.

Future Development based on future data collected in 2016

- Directly assigned Clinical T, N, M and Pathologic T, N, M will be collected in 2016.
- This current analyses is based on 'best' stage, i.e., derived AJCC 6th (2004-2009) and 7th (2010-2011) T, N, and M.
- How much does the Derived TNM differ from directly assigned TNM?
- How will clinical and pathologic TNM be combined for a best stage that then goes to SS2016?
- Should algorithm go directly to SS2016 without best stage?
- Need re-evaluation for changes to AJCC 8th .

