In Pursuit of Revenue and Prestige: The Adoption and Production of Master's Degrees by U.S. Colleges and Universities, 1969-2008

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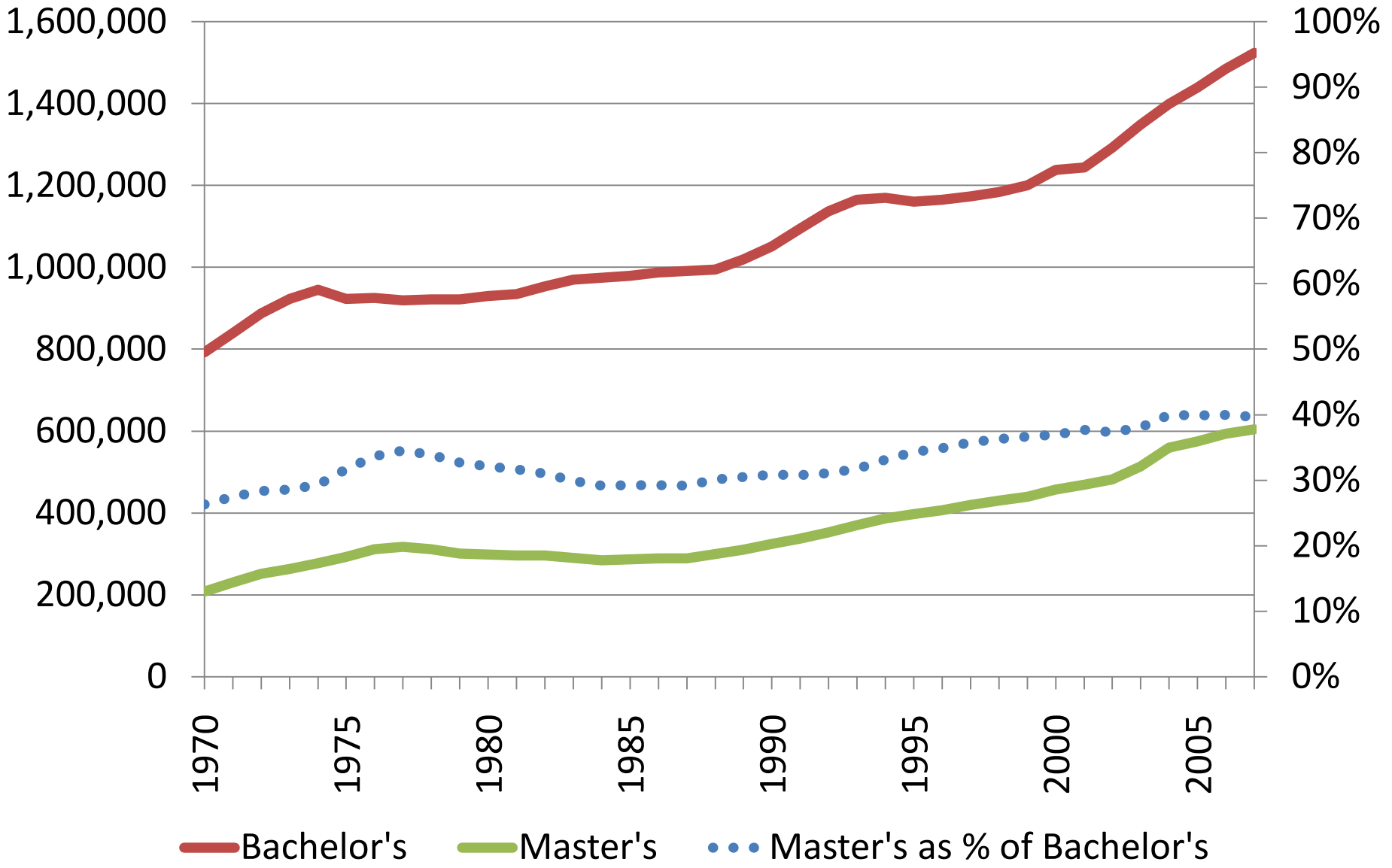
Research Questions

1. Why do colleges and universities (hereby institutions) adopt new degree programs, especially master's degrees?
2. What factors affect the production (i.e. enrollment size) of degree programs?

- Specific analyses will be guided by hypotheses from competing organizational theories.
  - Functionalism
  - Resource dependence theory
  - Neo-institutional theory

Why Focus on Master's Degrees?



Literature Review: Credentialism

- Credentialism:
  - Value of a credential declines as more people have it (Berg, 1970; Spence, 1973)
- 19th Century universities aggressively institutionalized the bachelor's degree
  - Market the bachelor's to industry (Brown, 1995; Veysey; 1965)
  - Annex the professions (Collins, 1979; Larson, 1977)
- Once credentials "institutionalized," credentialism is caused by student demand for mobility; universities are passive.
  - (Collins, 1979; Frank and Cook, 1995; Labaree, 1997)
- But universities have incentive to promote credentialism because they benefit from the tuition revenue

Literature Review: Privatization

- Privatization
  - Institutions become more entrepreneurial in maximizing revenue
  - Institutions at all levels attempt to increase prestige
- Causes
  - Decline in “traditional” revenues (e.g., state appropriations)
  - Increase in competition between institutions
    - Increase in rankings is both cause and consequence
- Empirical research
  - Commercialization of research (Slaughter and Leslie, 1997)
  - Pursuit of voluntary support (Cheslock and Gianneschi, 2008)
  - Out of state students (Curs, 2010)
  - Institutional aid for merit rather than need (Doyle, forthcoming)
  - Adoption of revenue generating master’s programs (Jaquette)

Research Implications: Adoption for Revenue

- Equality of opportunity
  - Benefits go to those who can afford to pay tuition
- Efficiency
  - Competition for jobs based on who has the most human capital.
  - Institutions adopt programs designed to provide students with an advantage in the competition for scarce jobs.
    - e.g., Levine (2005) argues that graduate programs in educational administration improve promotion/pay-grade, but not productivity
  - Arms race in educational attainment (Frank and Cook, 1995)
  - Total spending on education surpasses what is necessary to fulfill the skill demands of the labor market.
- Economic growth
  - Programs that are profitable not necessarily demanded by the labor market (e.g., culinary arts)

Organizational Theory Perspectives on the Adoption and Production of Academic Programs:

Functionalism, Resource Dependence Theory, Neo-Institutional Theory

"Functionalism"

- Core assumption
  - Practices exist because they serve some function for society (e.g., Davis and Moore, 1944; Parsons, 1959)
- Applied to adoption of credentials:
  - Changes in technology lead to changes in the division of labor, creating demand for new skills (Goldin & Katz, 2008), leading to demand for new academic programs (e.g., computer science)
- Example: Clarke, 1962, p. 2:
  - "Through its ramifying effects – for example, on transportation, communications, and distribution – technology alters nearly all institutions [especially] the role of education. Our age demands army upon army of skilled technicians and professional experts. To the task of preparing these men the educational system is increasingly dedicated."

- **H1:** Institutions adopt master's degrees related to occupations experiencing strong job growth

Resource Dependence Theory

- Problem with (sociological) functionalism
  - Insufficient focus on the incentives of individual actors
- Core assumptions (Pfeffer and Salancik, 1978)
  - Organizational goals: survival, autonomy, power
  - All organizations require resources from external environment
  - When a resource becomes scarce, find an alternative
  - Seek resources that minimize dependence/uncertainty

- Declining resources in higher education:
  - State appropriations for higher education (Kane, Orszag, and Gunter, 2003)
  - "Traditional" college age population (NCES, 2009)
    - U.S. Population of 18-24 year-olds: from 30.2 million in 1981 to 25.3 million in 1996

Resource Dependence Hypotheses

- **H2**: Institutions will adopt new master's degrees in response to (a) declines in per-capita state appropriations and (b) declines in FTE undergraduate enrollments.

- **H3**: Institutions with weak alternative sources of revenue are more likely than institutions with strong alternative sources of revenue to adopt new master's degrees in response to (a) declines in state funding and (b) declines in FTE undergraduate enrollments.

- **H4**: Institutions with weak alternative sources of revenue likely to adopt/produce programs with few academic prerequisites and low instructional costs.

- **H5**: Total production (i.e. enrollment size) of master's degrees should be higher (a) in institutions experiencing sharper declines in per-capita state appropriations and (b) in undergraduate enrollments.

What About Prestigious/Affluent Universities?

- Resource dependence
  - Resource dependence predicts stronger responses for organizations with few alternative revenues
- "Revenue theory of costs":
  - Intense competition for prestige at the top
  - Universities make as much money as they can and spend all the money they make on becoming more prestigious (Bowen, 1980; Winston, 1999)
  - Prestigious universities enjoy strong demand for programs.
  - From this perspective, they adopt master's degrees to make as much money as possible and spend that money on becoming more prestigious
  - Therefore, adoption/production is due to revenue opportunities not decline in other revenues.

Institutional Theory

- Core assumptions:
  - Organizations adopt practices perceived to be highly legitimate.
  - Two kinds of "legitimate" practices define what organizations "must" do:
    - Practices of prestigious organizations (Meyer & Scott, 1983).
    - Practices that that are highly prevalent within a particular organizational type (Strang and Meyer, 1993).
  - Organizations adopt "globally scripted" practices rather than practices suited to local "technical efficiency" conditions (e.g., labor market conditions or financial strain) (Meyer, 2008).

- Hypothesis 6:
  - Adoption of academic programs is caused by (a) prior adoption by prestigious organizations, (b) prior adoption/prevalence by organizations of the same type.

Data and Methods

- Data/sample
  - Panel dataset of all accredited U.S. postsecondary education institutions from 1968-69 to 2007-08
  - HEGIS/IPEDS surveys:
    - finance, completions, fall enrollment, and institutional characteristics
    - May add finance data from the Delta Cost Project

- Three Dependent variables (IPEDS/HEGIS)
  1. Adoption of a specific degree
     - Method: event history analysis
  2. Count of the number of degrees adopted per year
     - Method: Count panel models
  3. Annual number of degrees conferred
     - Method: Linear panel models

Independent Variables

- Finance
  - Tuition revenue; state appropriations, federal grants, endowment, gifts, etc.
- Enrollment
  - FTE undergraduate enrollment; first-time freshman enrollment; full-time vs. part-time, graduate student enrollment, etc.
- Institutional characteristics
  - Control; Carnegie Classification (1973, 1976, 1987, 1994, 2000, 2005); Barron's selectivity rankings (1972, 1982, 1992, 2004)
- State level (use as instruments, covariates)
  - Time varying population by age-group
  - Time varying state revenues and expenditures
  - Current Population Survey (CPS) data on change in total employment and earnings by occupation

Construction of Adoption Variable

- Simple case: unchanging system of degree codes
  - Sort by ID, award level, degree code, year
  - Adoption is first instance of degree code
- Problems:
  - Universities often use different codes for the same degree
  - Degree classification system changes six times, 1969-2008
    - Pre-HEGIS; HEGIS; 1980 CIP; 1985 CIP; 1990 CIP; 2000 CIP
- Solutions
  - Create measures at four levels of aggregation
    - 2-digit Classification of Instructional Program (CIP); 4-digit CIP; 6-digit CIP; WebCaspar (NSF)
  - Create degree-code crosswalks for “transition years” when degree classification systems change
  - For degree codes that are “new” to a classification system, cannot count as adoption within two years of transition

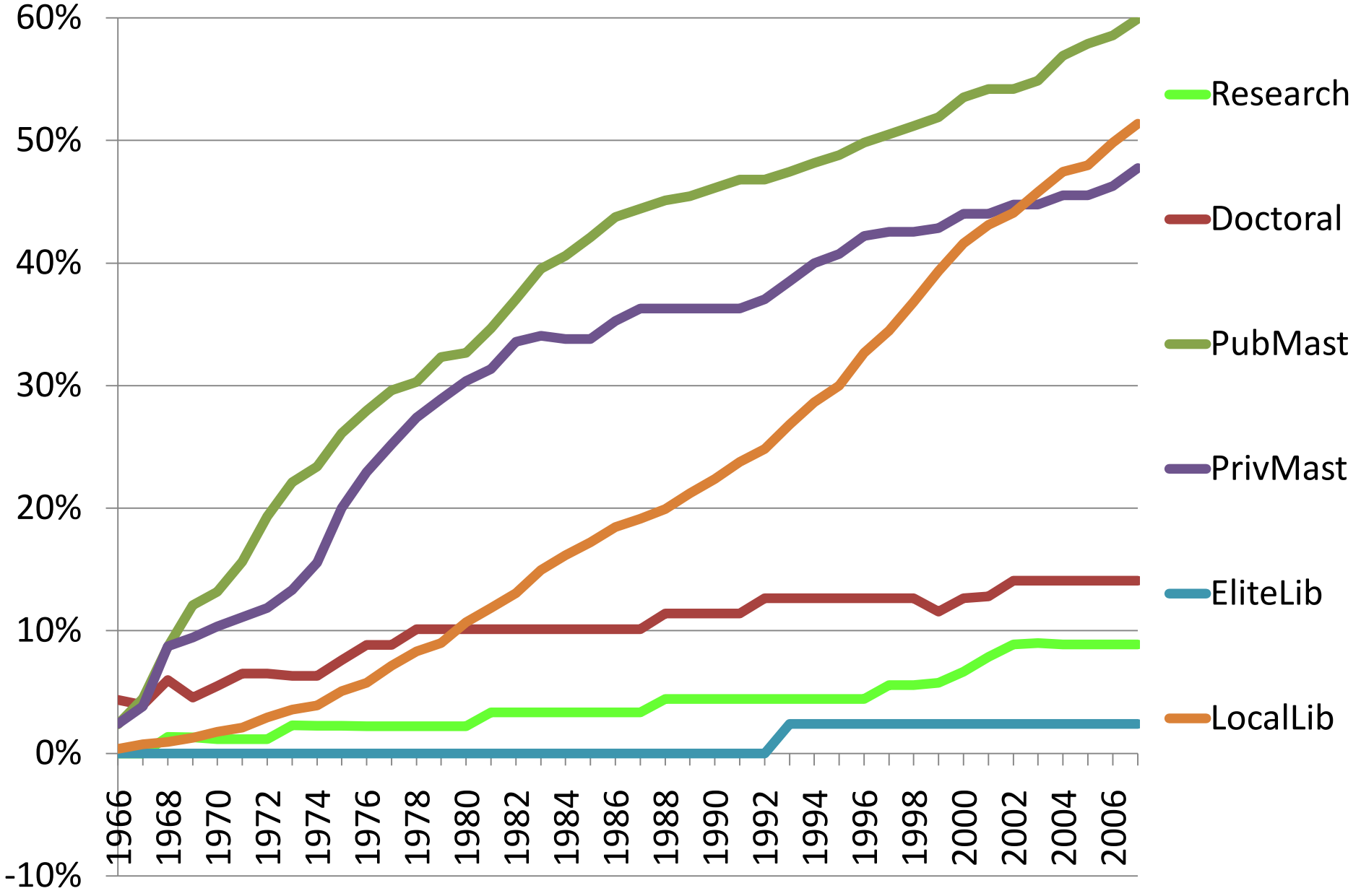
Adoption Variables

- First time adoption of any 2-digit CIP code
- First time adoption of any 4-digit CIP code
  - e.g., 11.02 – computer programming, 13.11 – student counseling and personnel services
- Adoption of seven 2-digit CIPS accounting for 77% of all master's degrees conferred in 2007-08
  - Computer/information science (11)
  - Education (13)
  - Engineering (14,15)
  - Biological biomedical sciences (26)
  - Public administration and social services (44)
  - Health professions and related clinical sciences (51)
  - Business, management, marketing (52)
- Additionally, adoption of select 4-digit codes

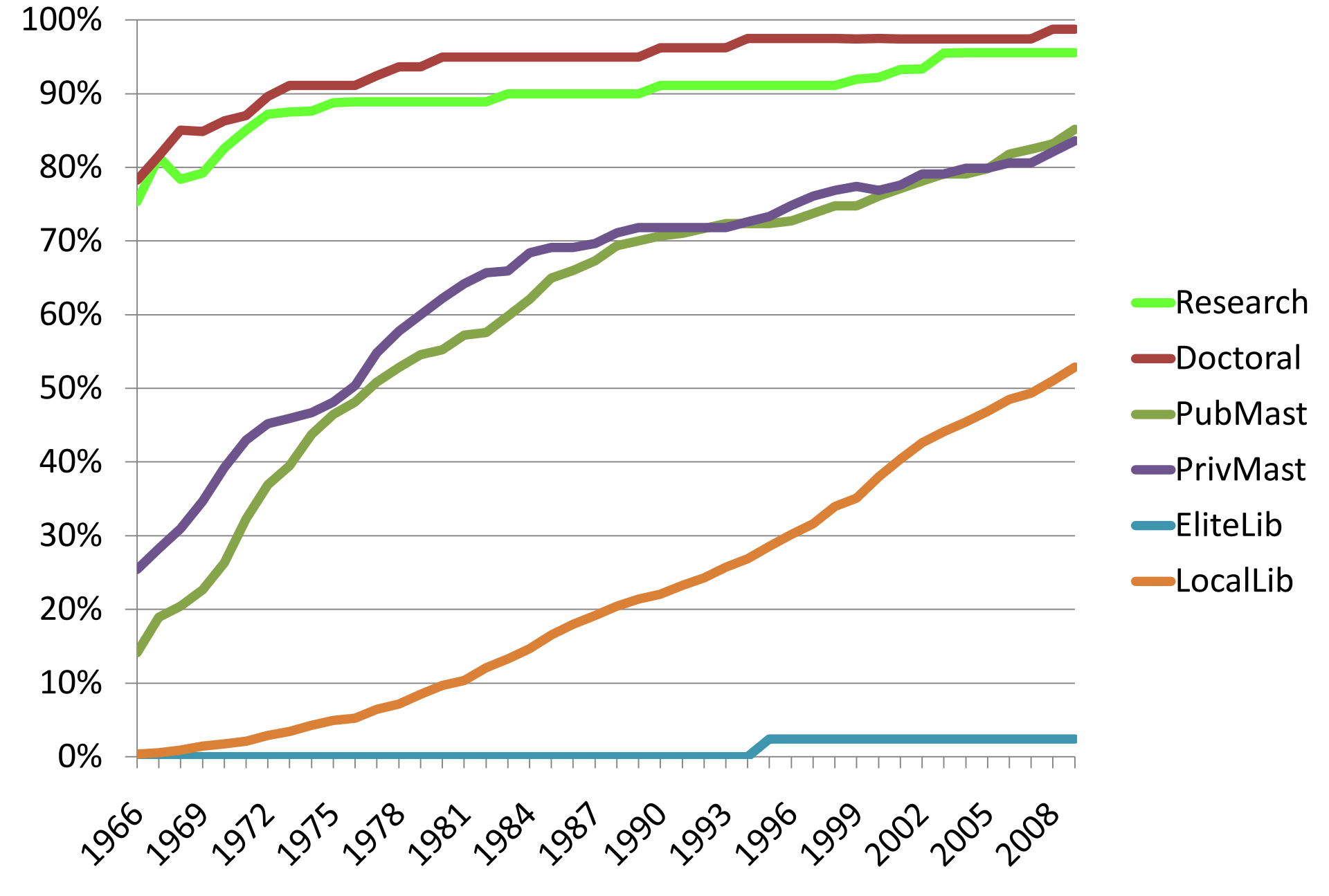
Sample Size by Control, Carnegie, and Barron's

	ResPub	ResPriv	DoctPub	DoctPriv	MastPub	MastPriv	LibElite	LibLocal
1966	39	34	42	27	270	126	40	522
1967	52	34	47	29	288	131	41	532
1968	42	32	40	27	280	126	39	529
1969	45	32	39	27	282	127	41	539
1970	51	35	45	28	304	135	42	546
1975	54	35	50	29	324	135	42	560
1980	55	35	50	29	326	135	42	561
1985	55	35	50	29	326	136	42	563
1990	55	35	50	29	326	135	42	543
1995	55	35	50	29	326	135	42	531
2000	55	35	50	29	326	134	42	524
2005	55	35	50	28	326	134	42	513
2009	55	35	50	28	326	134	42	512

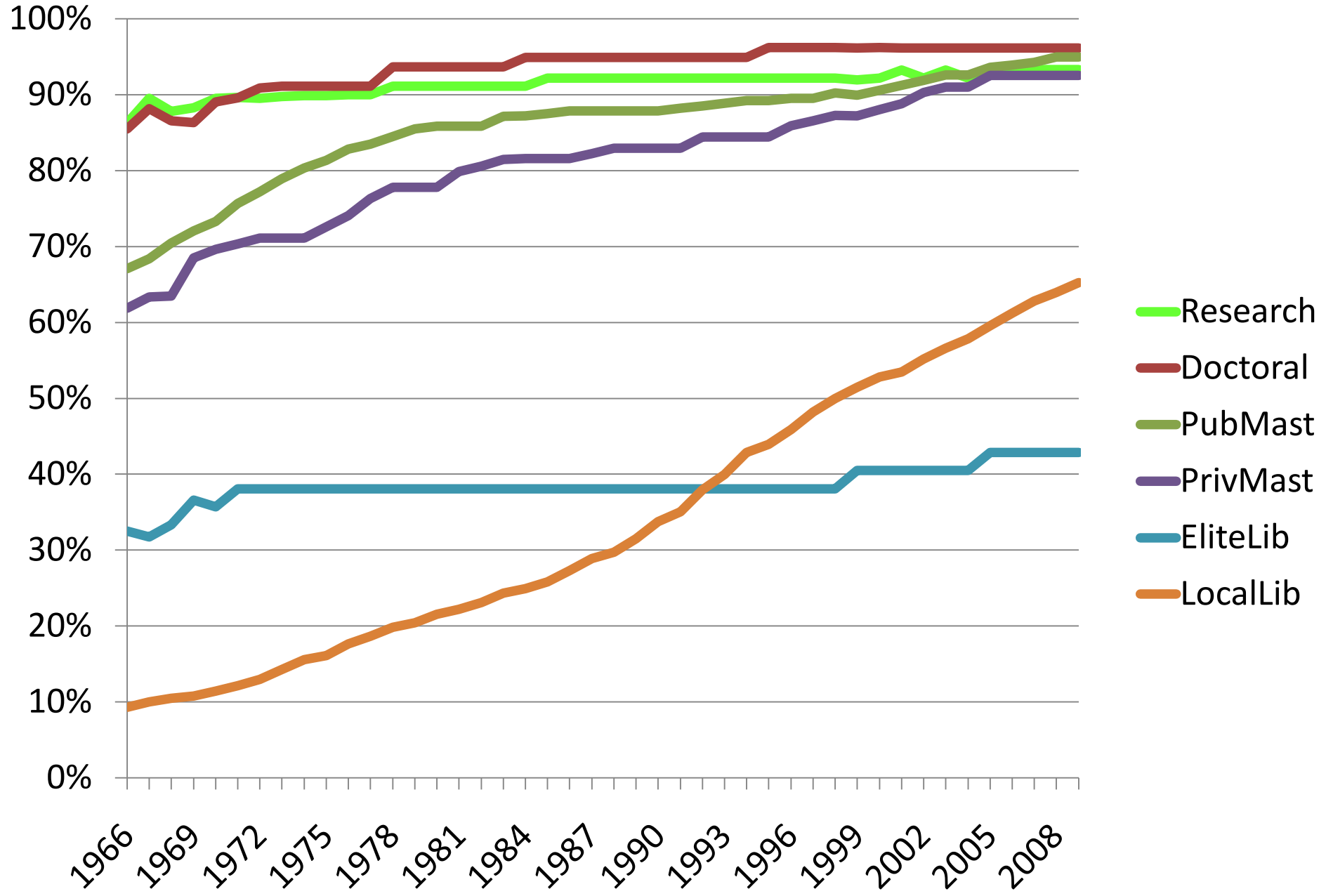
Pct Ever Adopting MA Business, 1966 to 2007



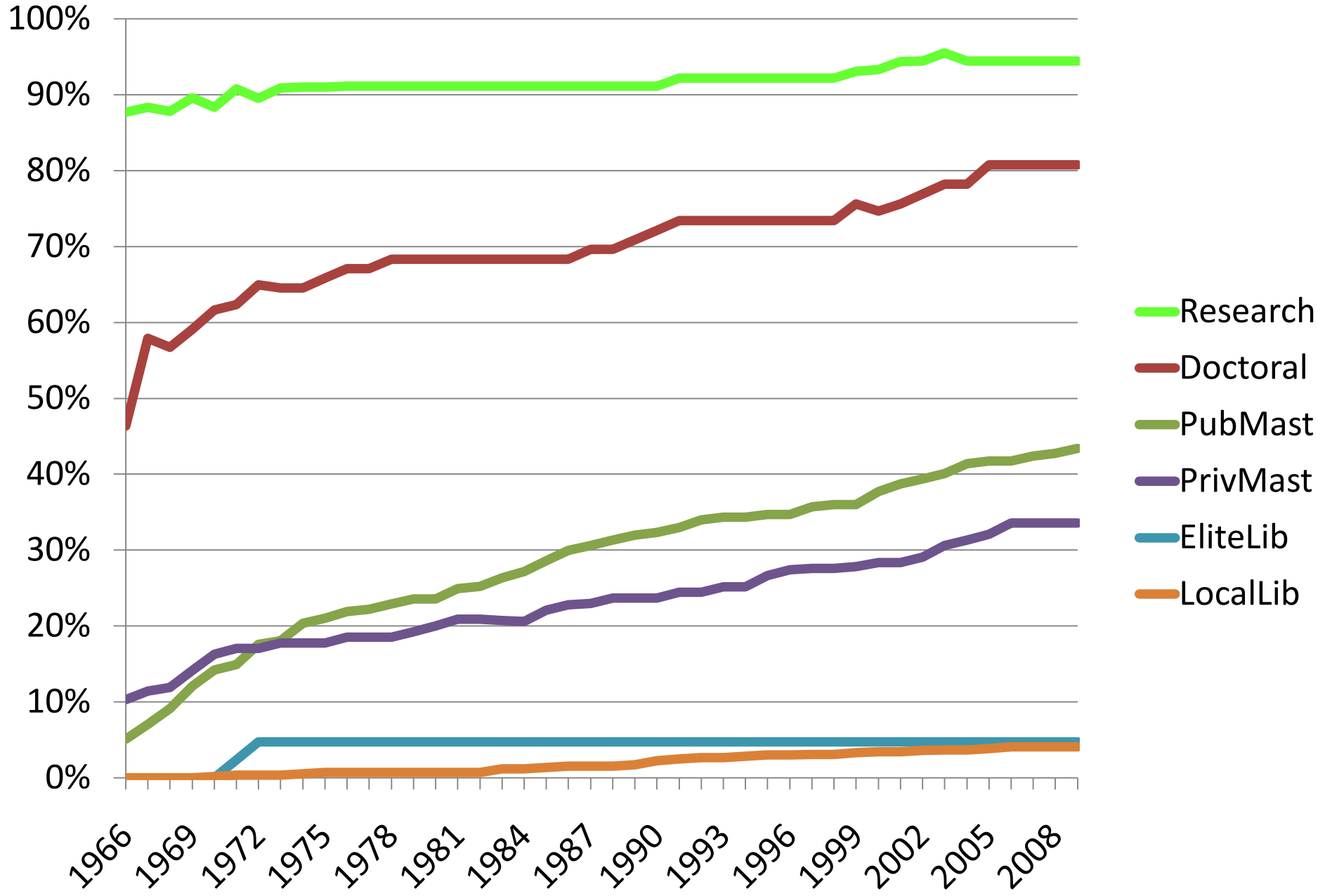
Pct Ever Awarding MA Business, 1966 to 2009



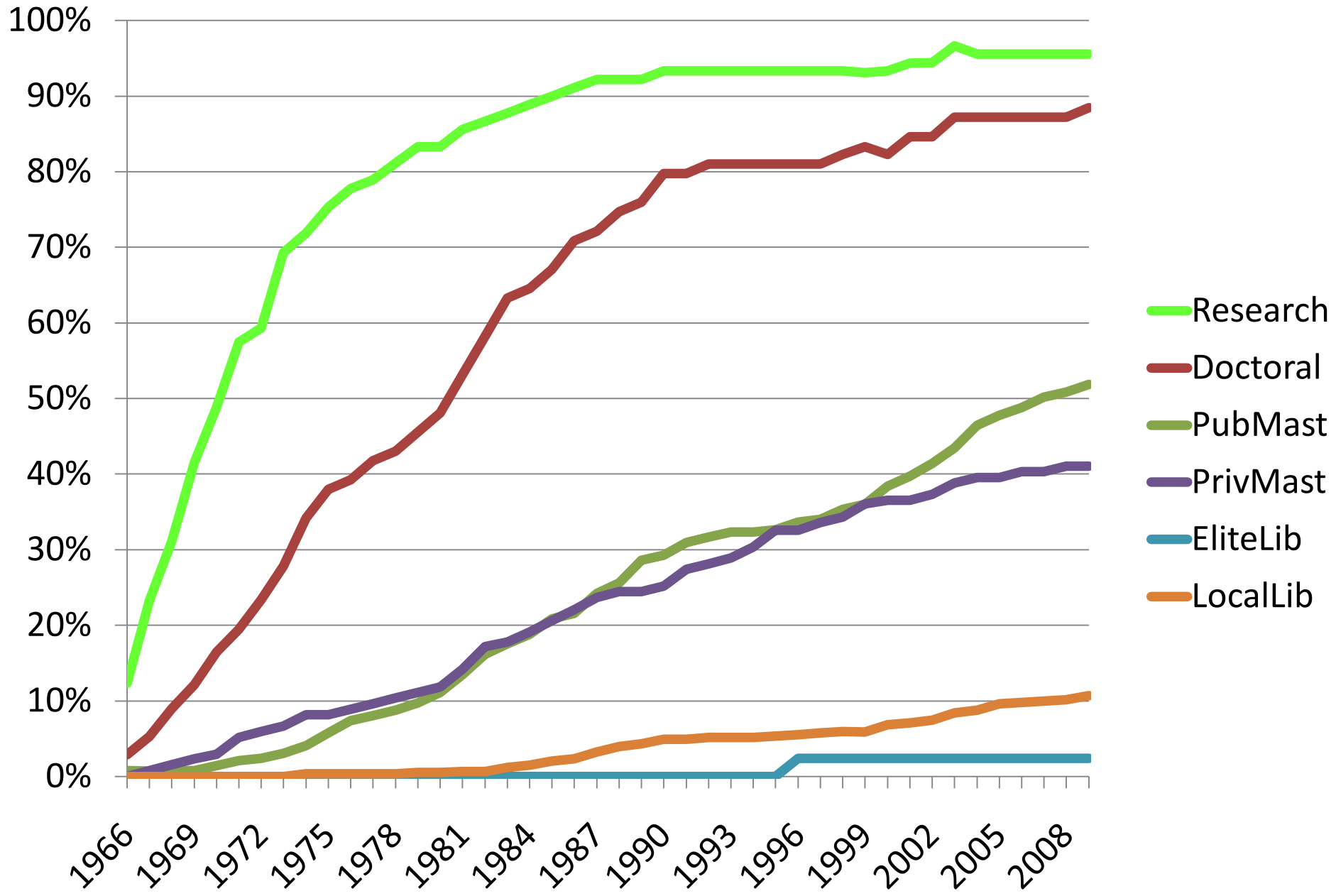
Pct Ever Awarding MA in Education, 1966 to 2009



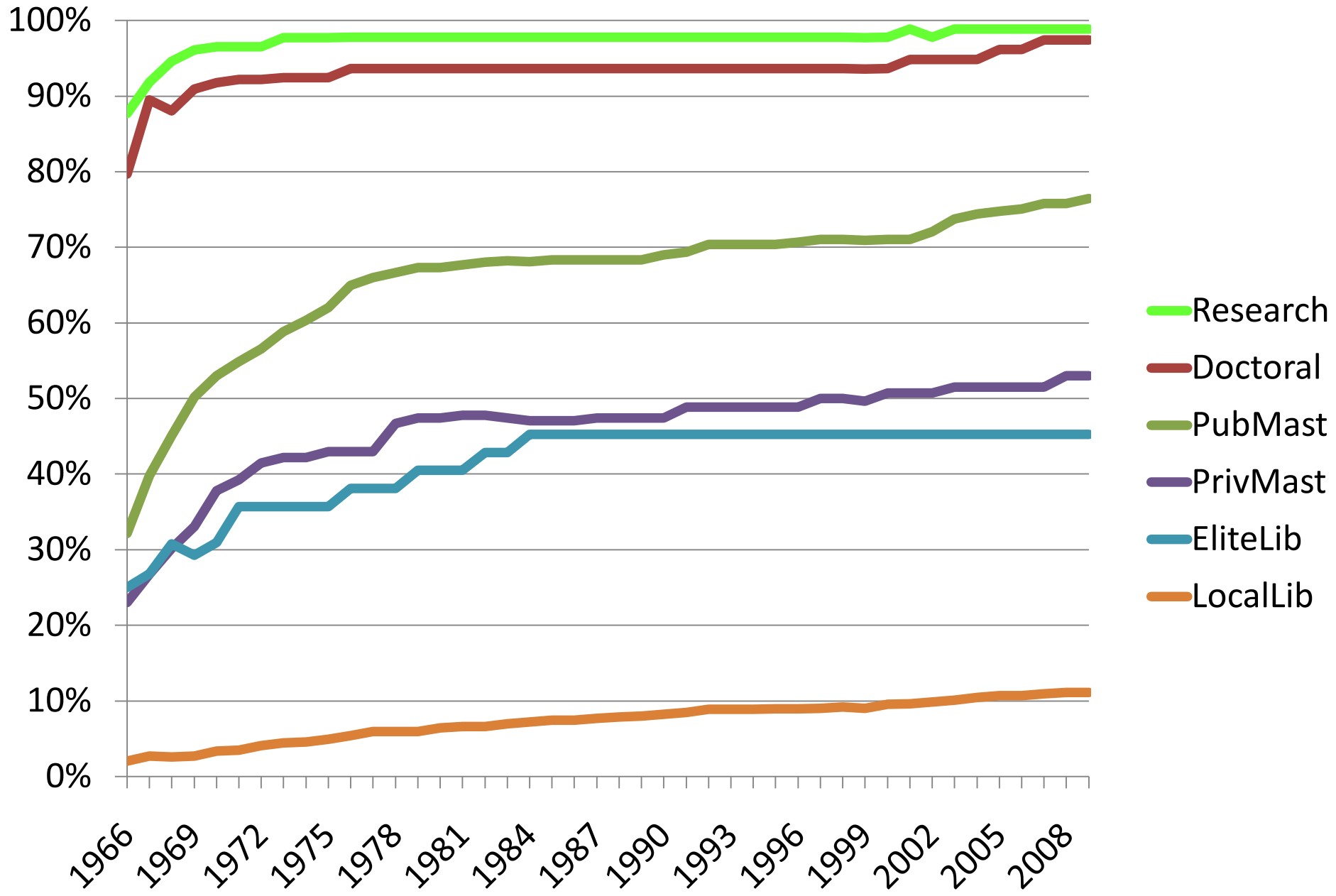
Pct Ever Awarding MA in Engineering, 1966 to 2009



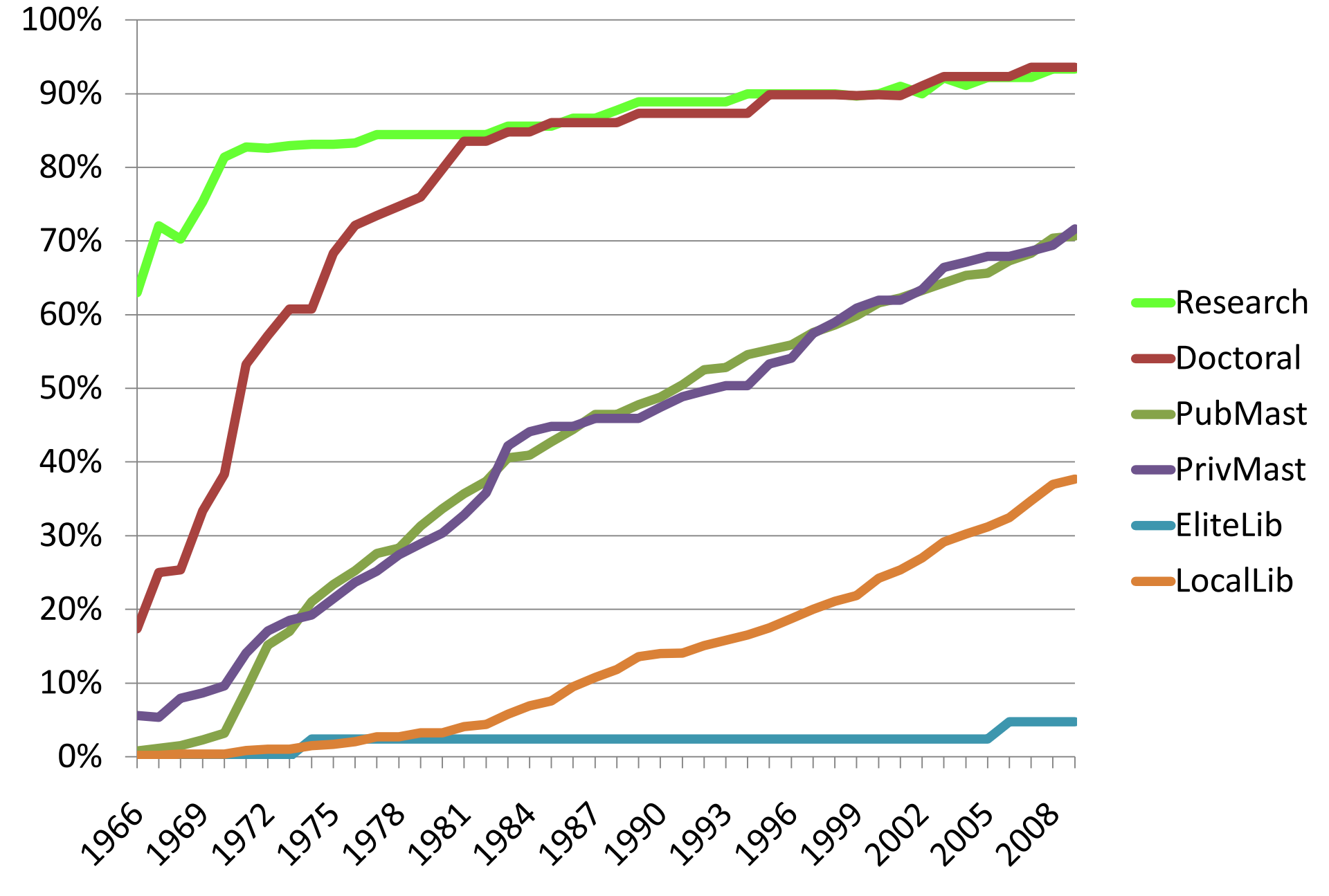
Pct Ever Awarding MA in Computer Sci, 1966 to 2009



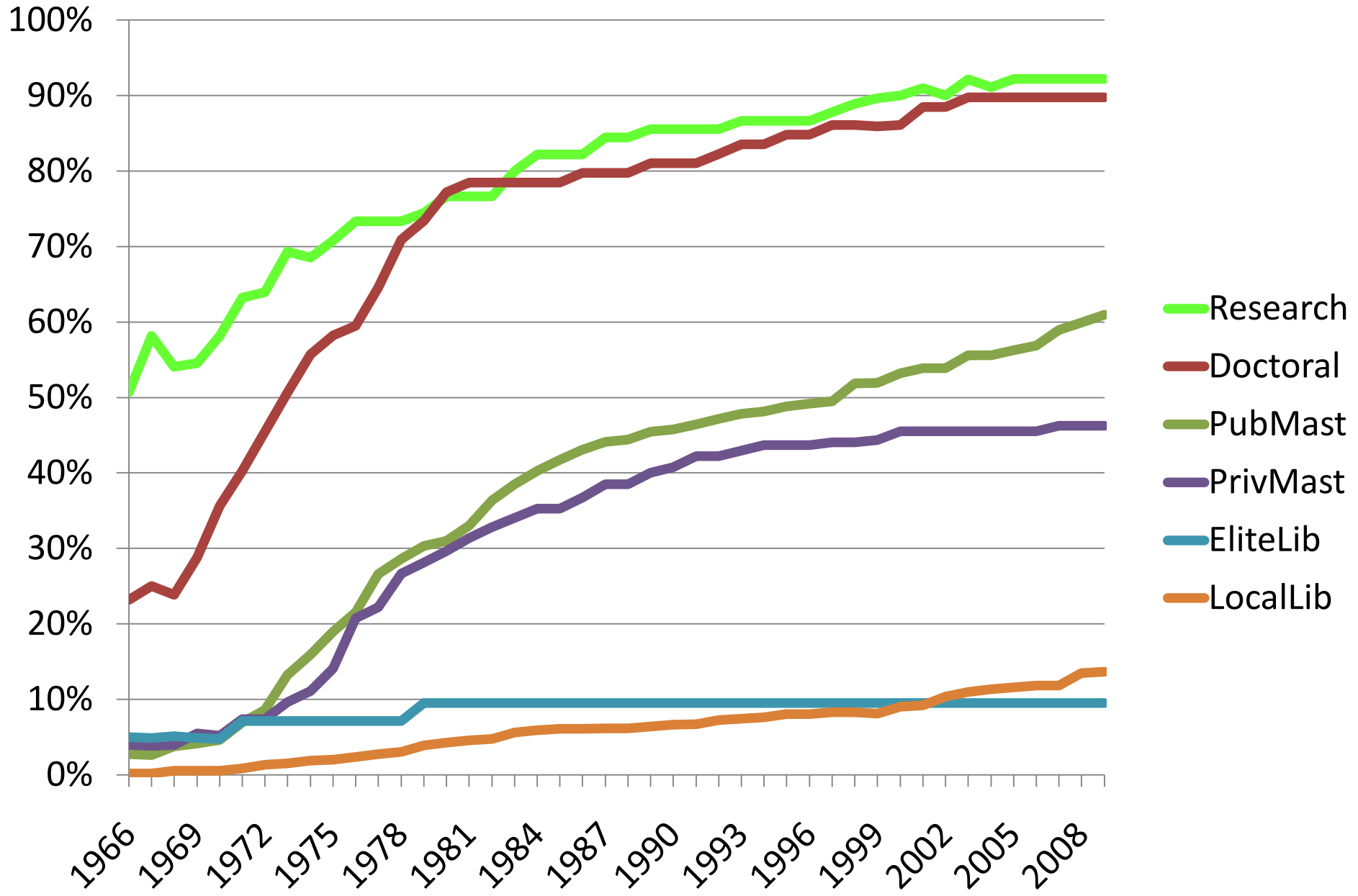
Pct Ever Awarding MA Bio/Life Sciences, 1966 to 2009



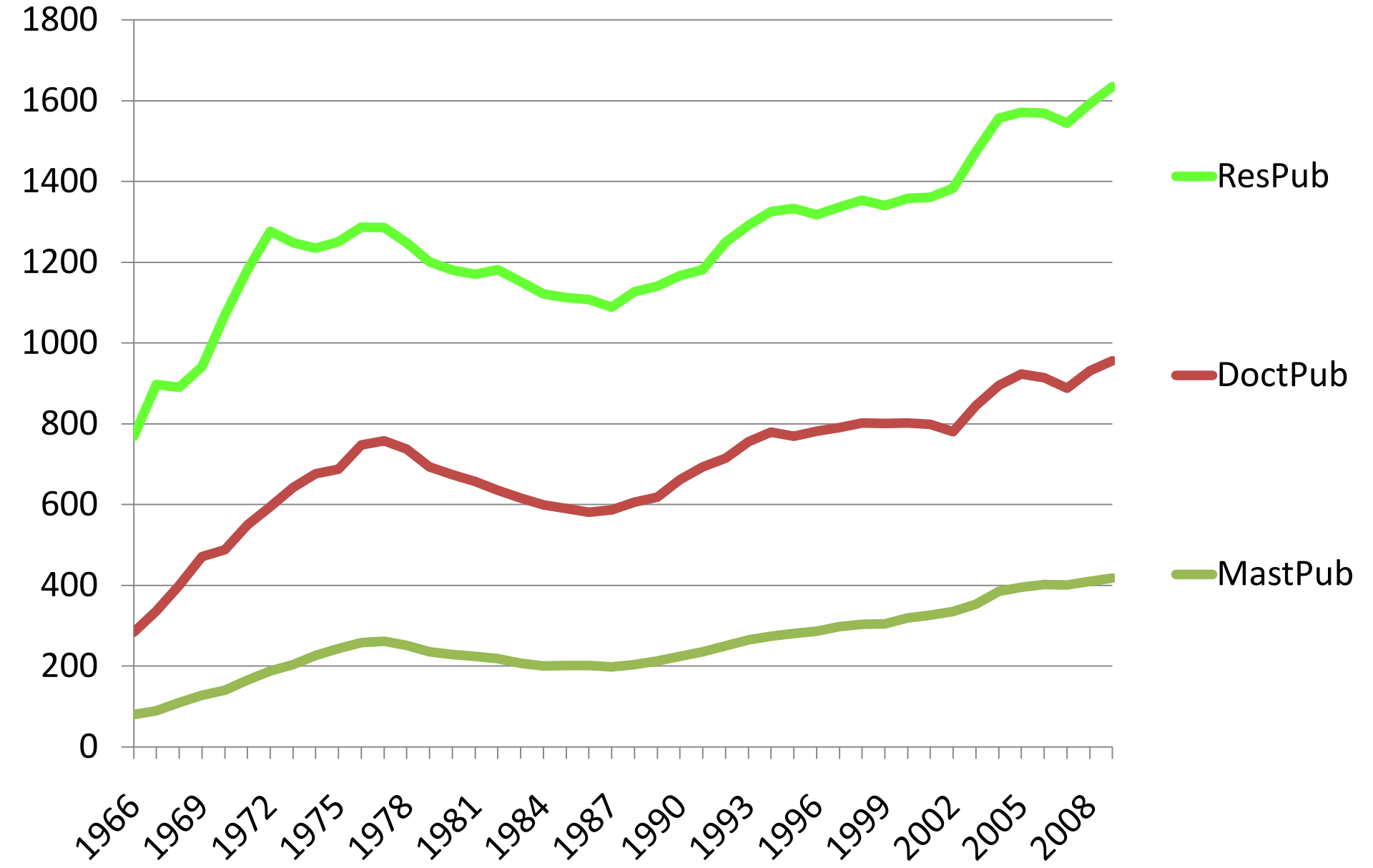
Pct Ever Awarding MA in Health, 1966 to 2009



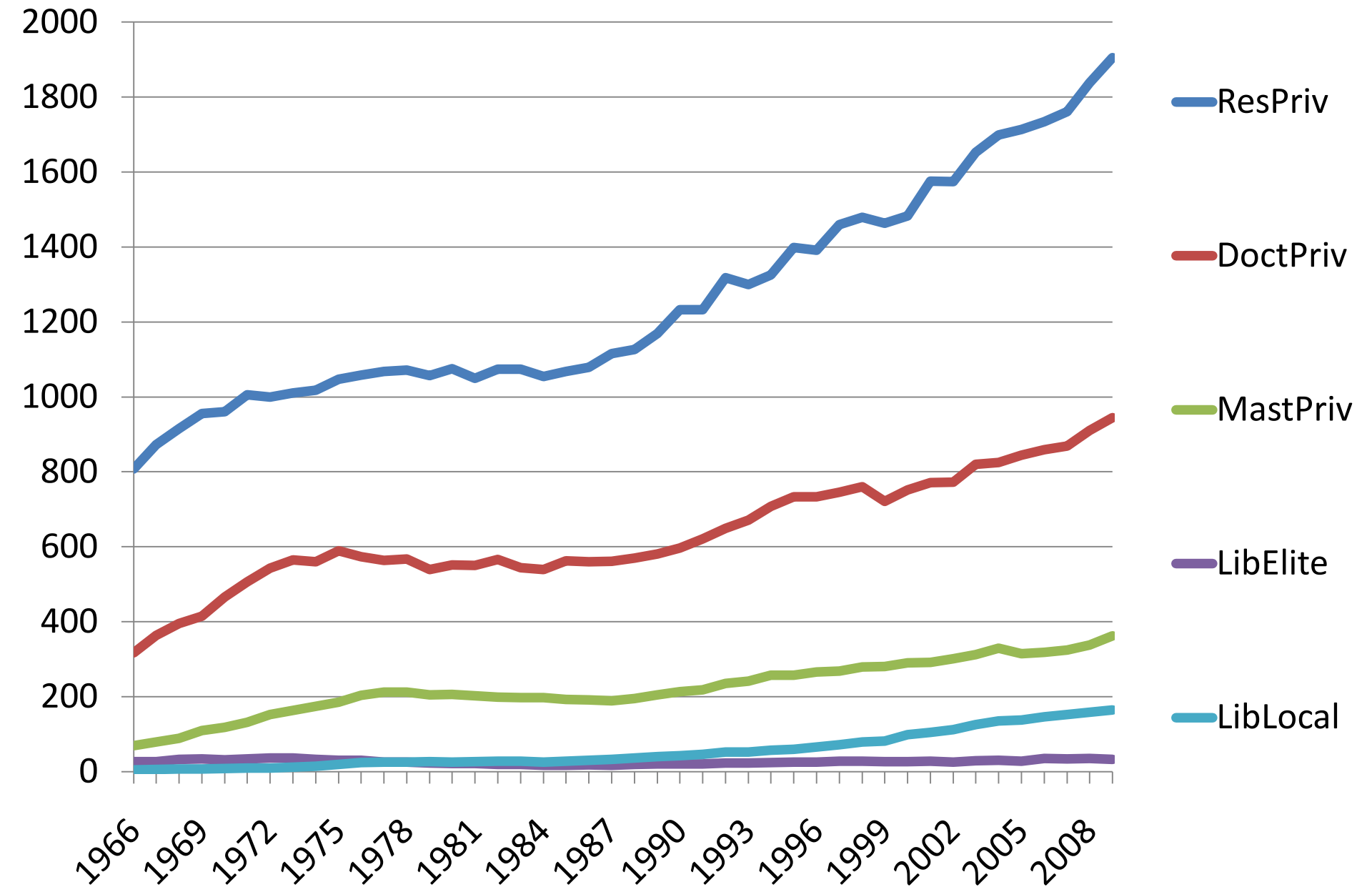
Pct Ever Awarding MA PubAdmin/SocServices



Annual Master's Degree Production, Publics



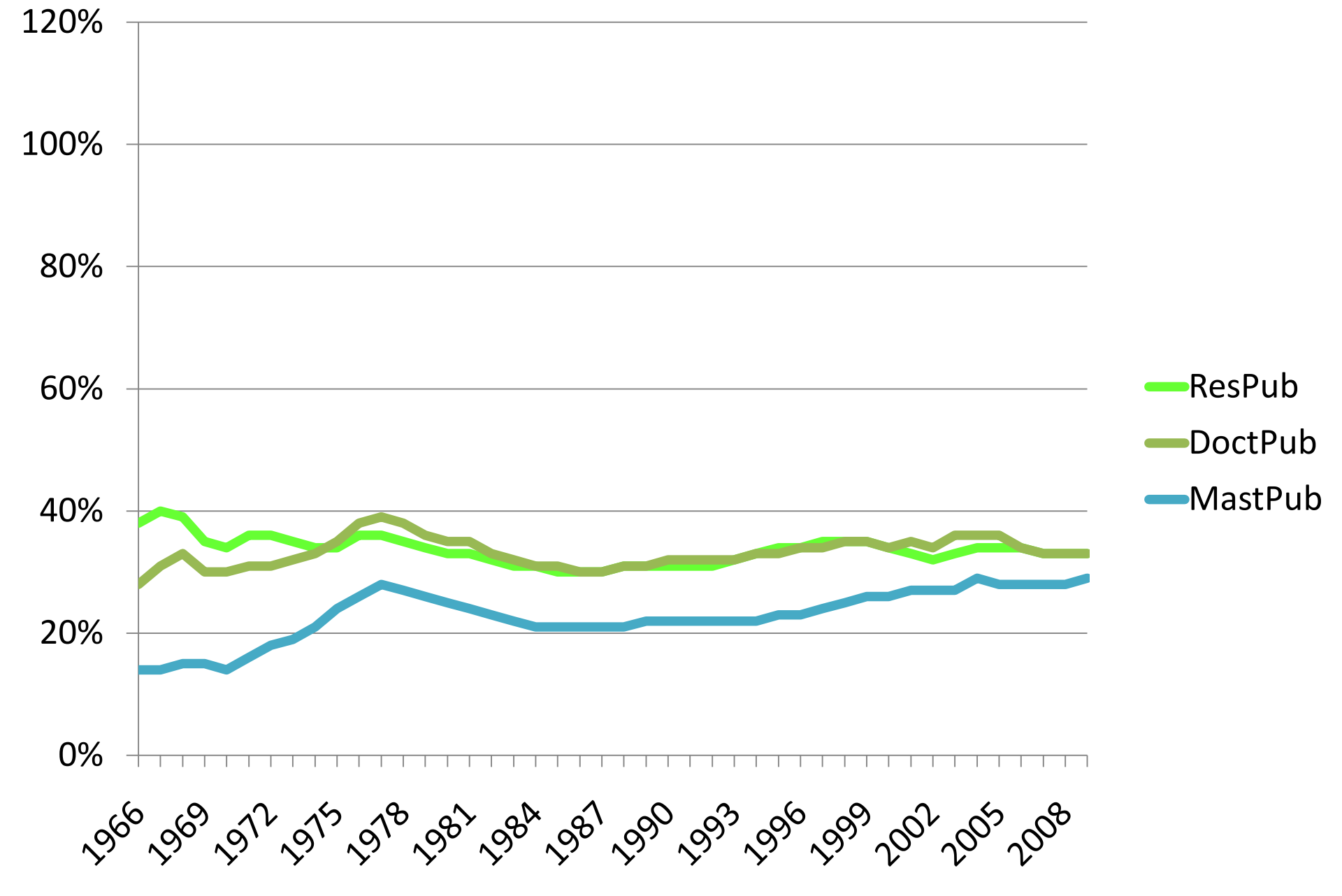
Annual Master's Degree Production, Privates



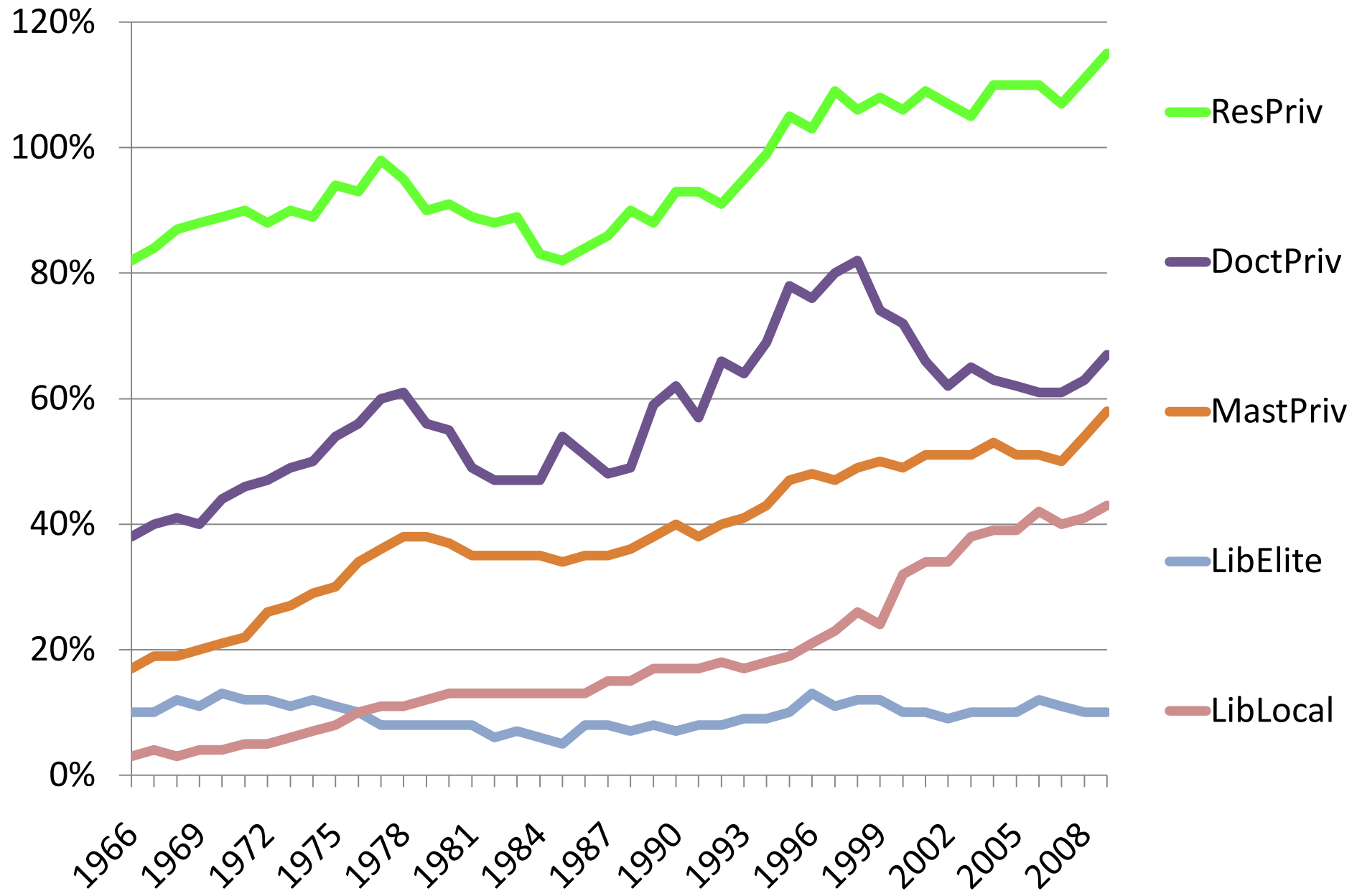
Annual Master's Degree Production, Privates

	ResPriv	DoctPriv	MastPriv	LibElite	LibLocal
1966	808	317	69	27	5
1970	960	466	118	32	9
1975	1,047	589	186	30	19
1980	1,075	551	206	22	26
1985	1,068	563	193	17	28
1990	1,233	597	213	21	43
1995	1,398	733	257	25	60
2000	1,483	752	290	27	99
2005	1,713	845	315	28	138
2009	1,905	945	363	33	165

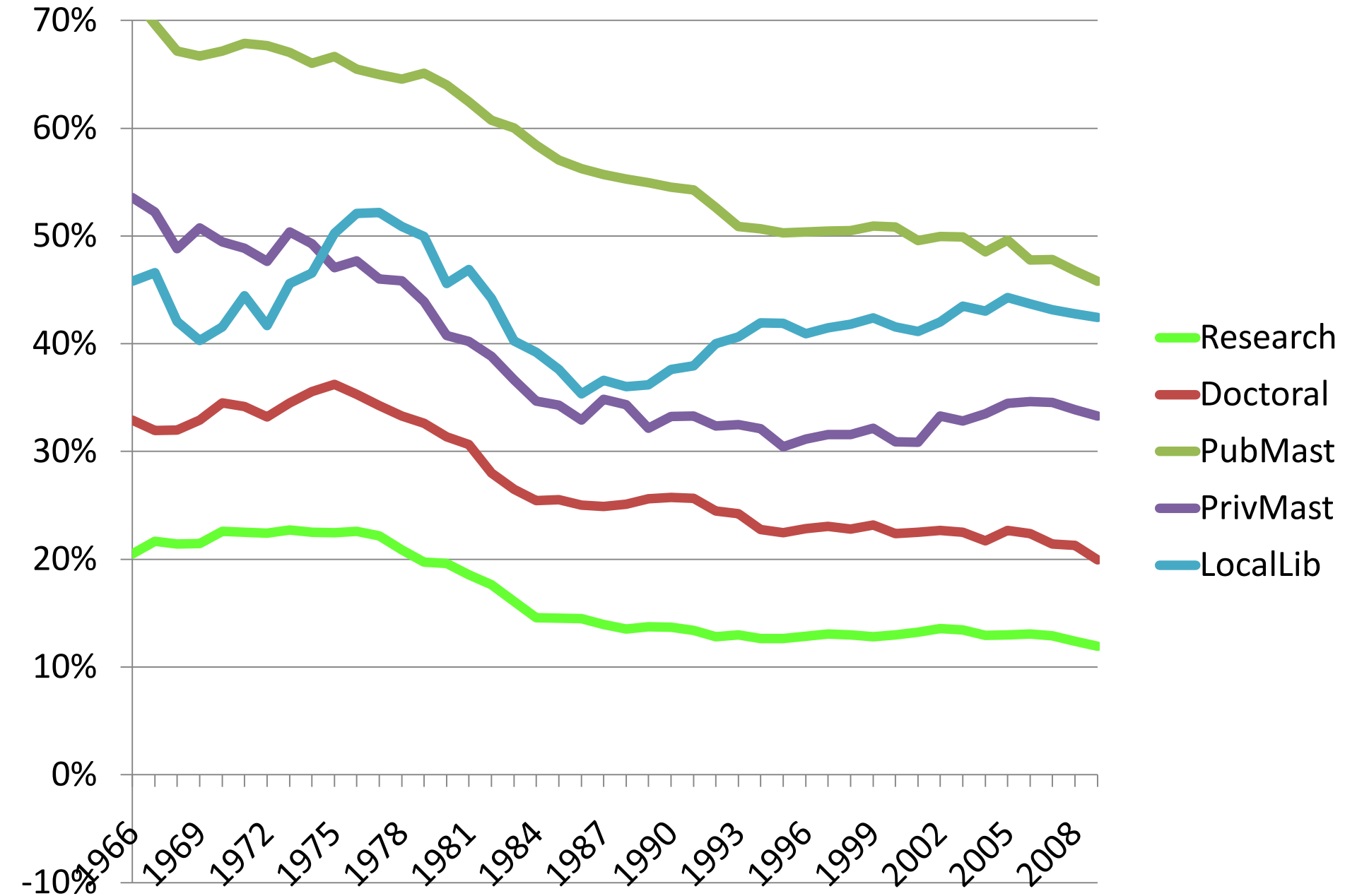
Master's Degrees as Pct of Bachelor's, Publics



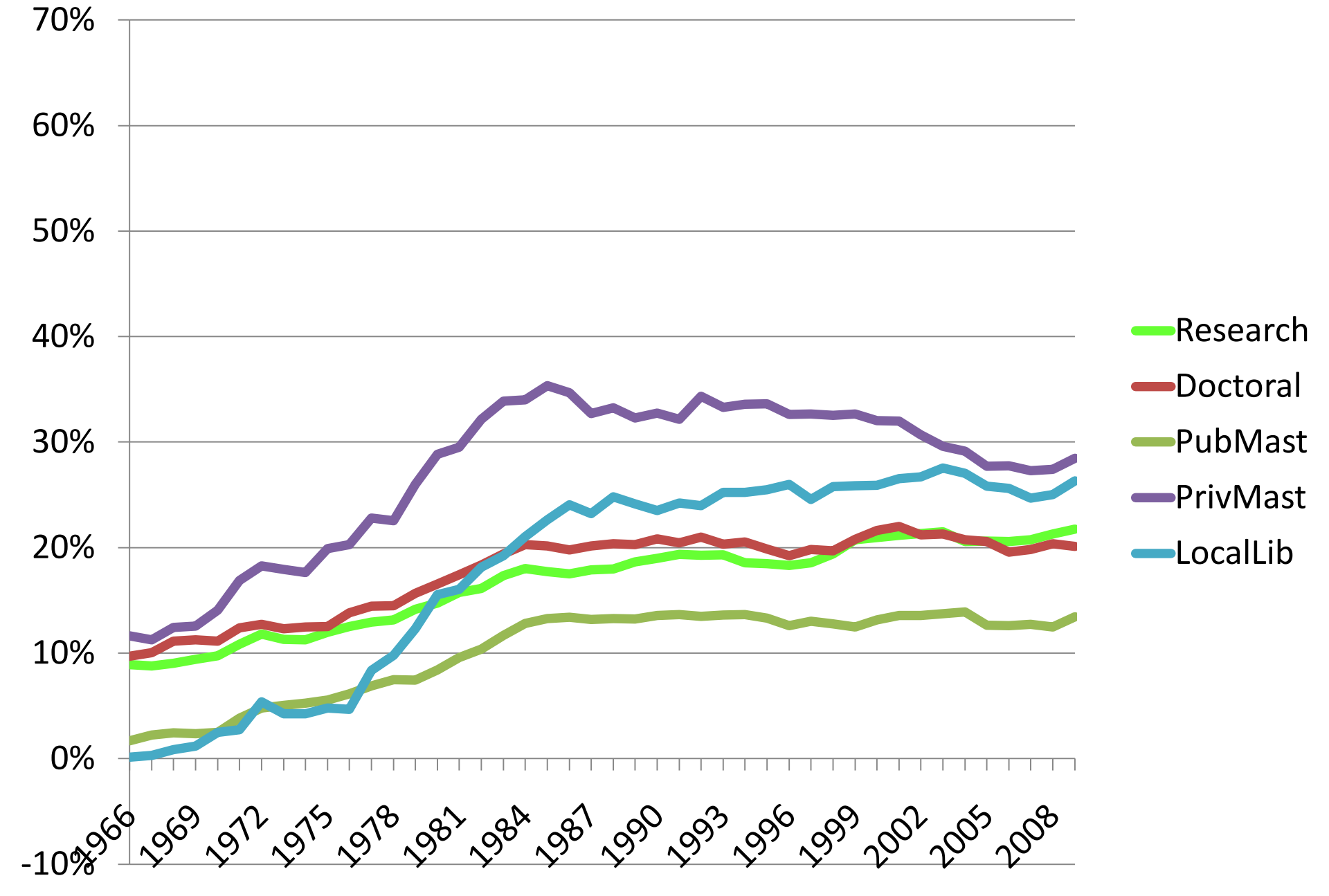
Master's Degrees as Pct of Bachelor's, Privates



MA Education as Pct of all MA, if total MA>0



MA Business as Pct of all MA, if total MA>0



Finances

- I focus on change in revenues, not costs
  - Economists of higher education generally view revenue as more important (and tractable) than costs.
  - Bowen, 1980; Breneman, 2001: Given that colleges generally spend all the money they make on becoming more prestigious, the only way to decrease costs is to decrease revenues.
- I focus on current funds revenues because these are available (somewhat) consistently over time
  - Current funds
    - Support the day to day activities of the institution (e.g., tuition revenue, auxiliary enterprises, government appropriations)
  - Noncurrent funds
    - Includes revenues and expenses associated with the endowment, physical plant, student loans, etc.

Changing Accounting Standards

- "Old form"
  - Until 1997 for all institutions, until 2003 for public institutions
  - Focus on current funds revenues
  - Restricted vs. unrestricted revenues
- Financial Accounting Standards Board (FASB)
  - Used beginning in 1997, primarily for private, non-profit institutions
  - Focuses on "institution as a whole," that is both current funds and non-current funds (NCES, 2000)
- Government Accounting Standards Board (GASB)
  - Phased in beginning in 2002 for public institutions
  - Focus on both current and non-current funds

Total Current Funds

- "Old Form"
  - includes (1) all unrestricted funds accepted/received during the fiscal year and (2) the portion of restricted funds for which terms of agreement have been carried out
  - Tuition discounts counted as revenue, also double counting state grants
- FASB/GASB
  - All revenues recognized as soon as they are received
  - Revenue calculated net of all allowances (e.g., tuition discounts)
  - From "endowment income" (Old Form) to "investment income" (FASB)

Concepts Related to Tuition Revenue

- Institutional grants (institutional allowances):
  - Expenditures for scholarships and fellowships from revenues generated by your institution, excluding funds received from governmental and private sources, (e.g., Pell Grants and state merit aid) (from 1991-92 finance survey)
  - Examples: price discounting, scholarships for students in “honors program”
- Allowances:
  - Difference between stated price and the amount actually paid (NACUBO, 1997).
  - Allowances include institutional grants and external revenues (e.g. state merit aid) that are included in revenue categories other than tuition.
- Third party payers:
  - Payments received from a third party applied directly to satisfy tuition/fees of a student. Count as tuition revenue, not allowances.

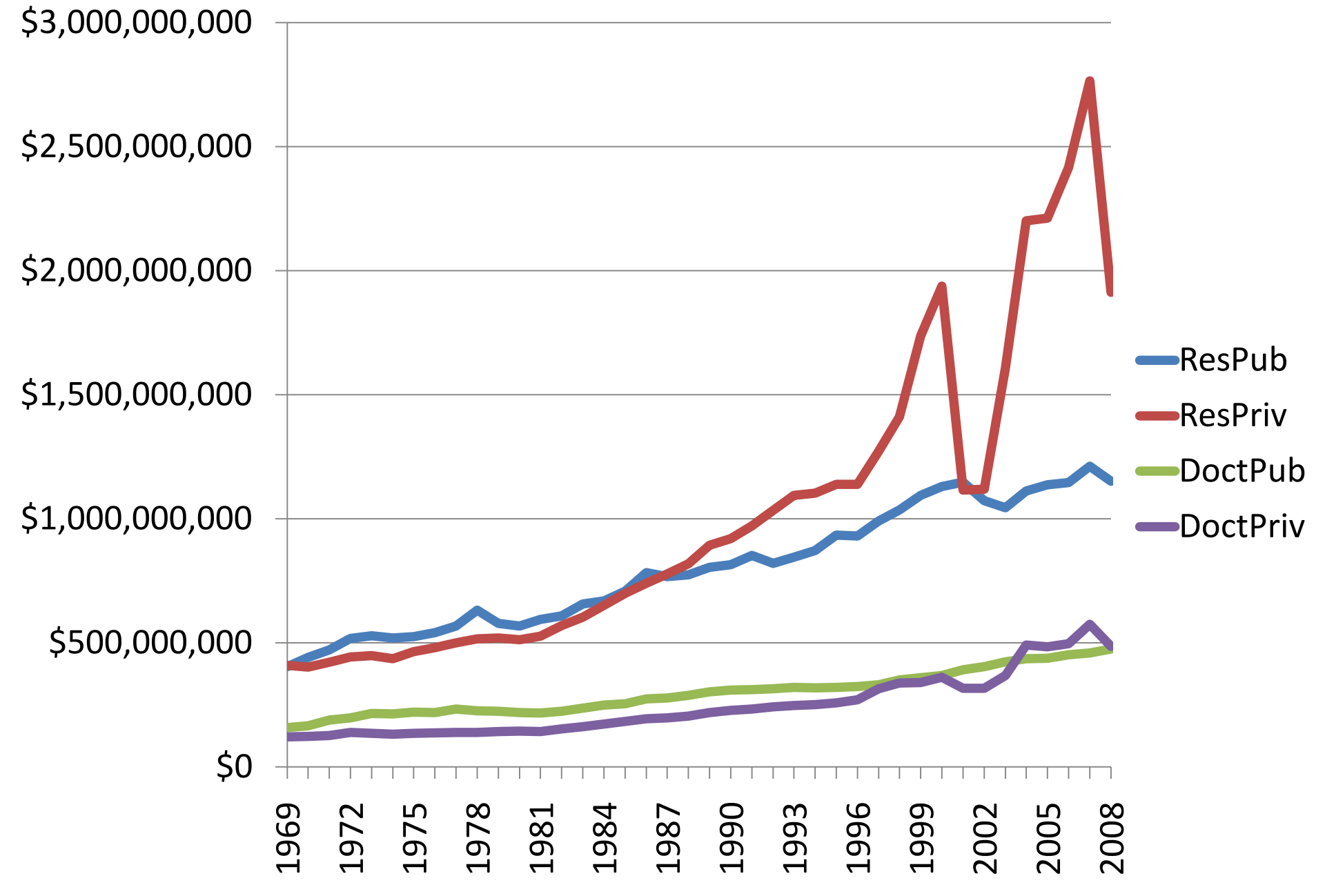
Tuition and fees

- "Old form":
  - Count tuition and fees as unrestricted revenues even if student received discount. Count the discount as an expenditure.
- FASB and GASB 34/35:
  - Tuition revenue is calculated net of all allowances (e.g. institutional grants). Discounts are not counted as expenditures.
  - "Amounts received to satisfy student tuition and fees will be reported as revenue only once (e.g., student fees, gifts, investment income), and only amounts actually received from students and third-party payers to satisfy student tuition and fees will be reported as tuition and fee revenue."
- Create additional measures of total current revenues
  - For institutions using FASB or GASB 34-35, I add allowances (e.g. institutional grants, state grants) applied to tuition and fees
  - This measure double counts some revenues and counts some revenues that were never received, but is the more consistent denominator

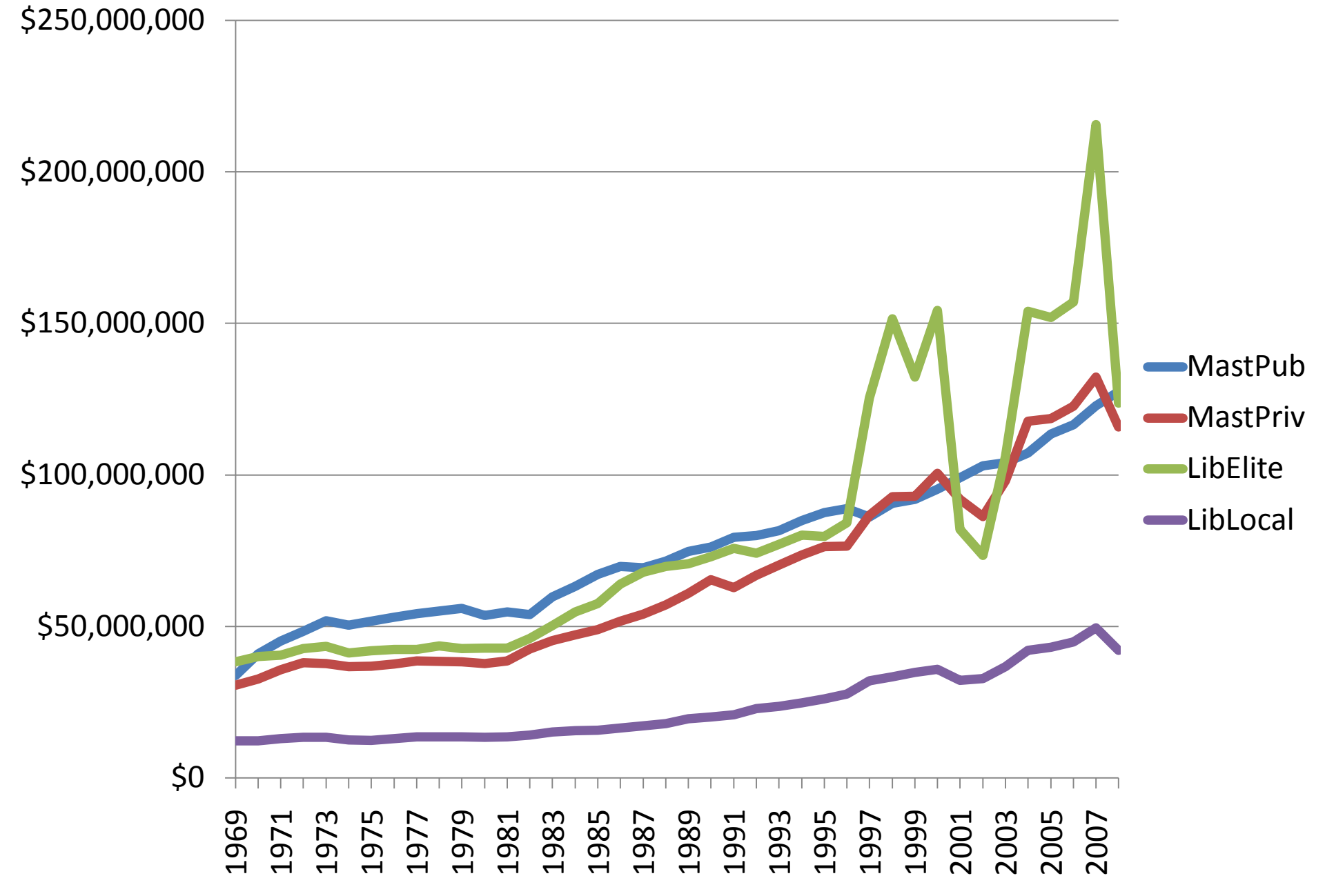
Tuition Variables Available Over Time

- Gross tuition (do not subtract allowances)
  - HEGIS (1969 to 1986): =a01c1
  - IPEDS (pre-FASB), GASB 34/35: =a01c3
  - FASB/GASB: = “Tuition and fees net of allowances (f2d01)” + “allowances applied to tuition and fees (f2c08)”
- Tuition net of institutional grants (i.e. institutional allowances)
  - HEGIS (1969 to 1986): not available
  - IPEDS (pre-FASB, GASB 34/35): = “gross tuition (a013)” – “scholarship expenditures from institutional revenues (e063)”
  - FASB/GASB: = “tuition net of all allowances (f2d01)” + “allowances applied to tuition and fees (f2c08)” – “funded institutional grants (f2c05)” – ”unfunded institutional grants (f2c06)”
- Tuition net of all allowances
  - HEGIS: not available
  - IPEDS (pre-FASB): not available
  - FASB/GASB: = f2d01

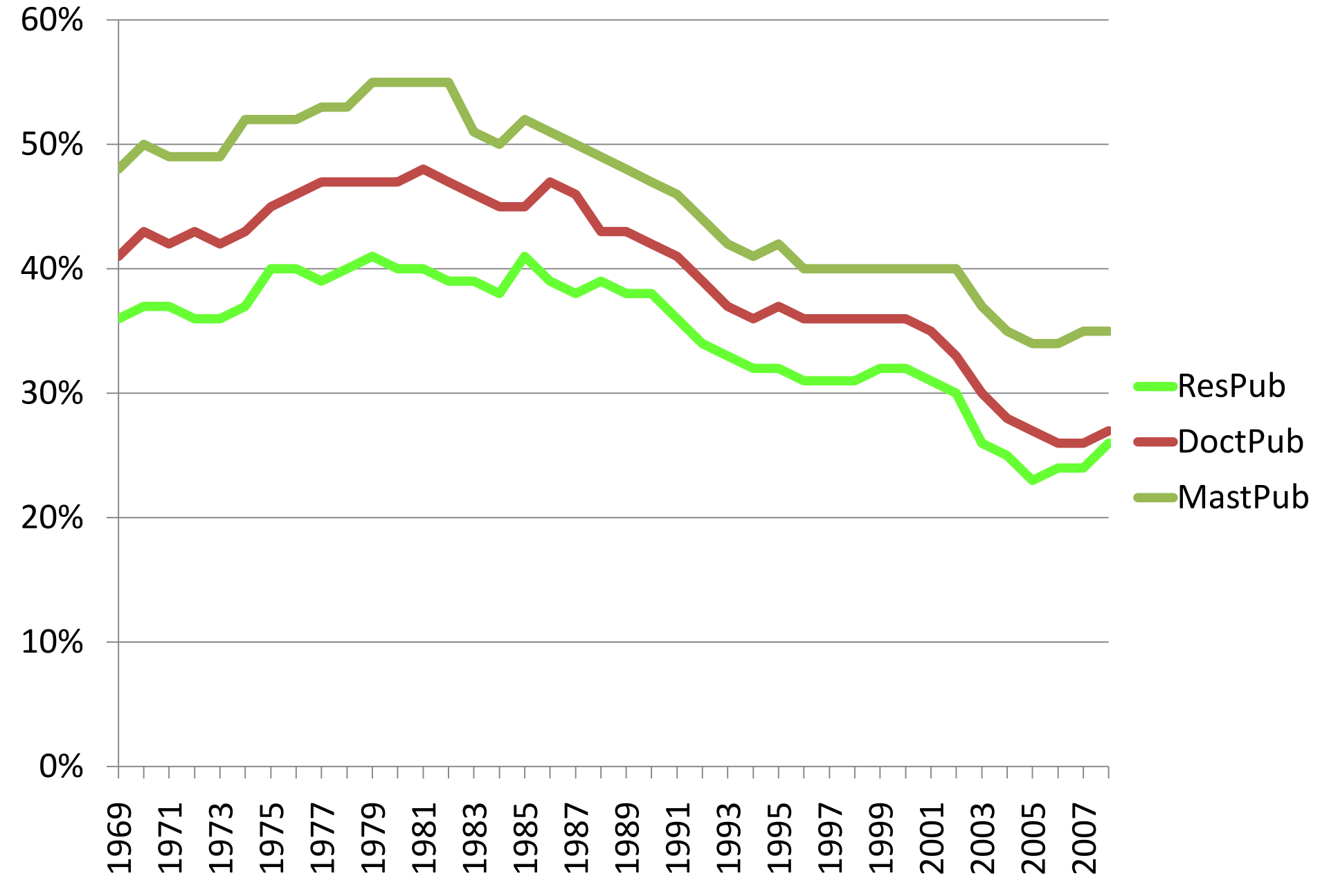
Median Total Current Rev, Research and Doctoral



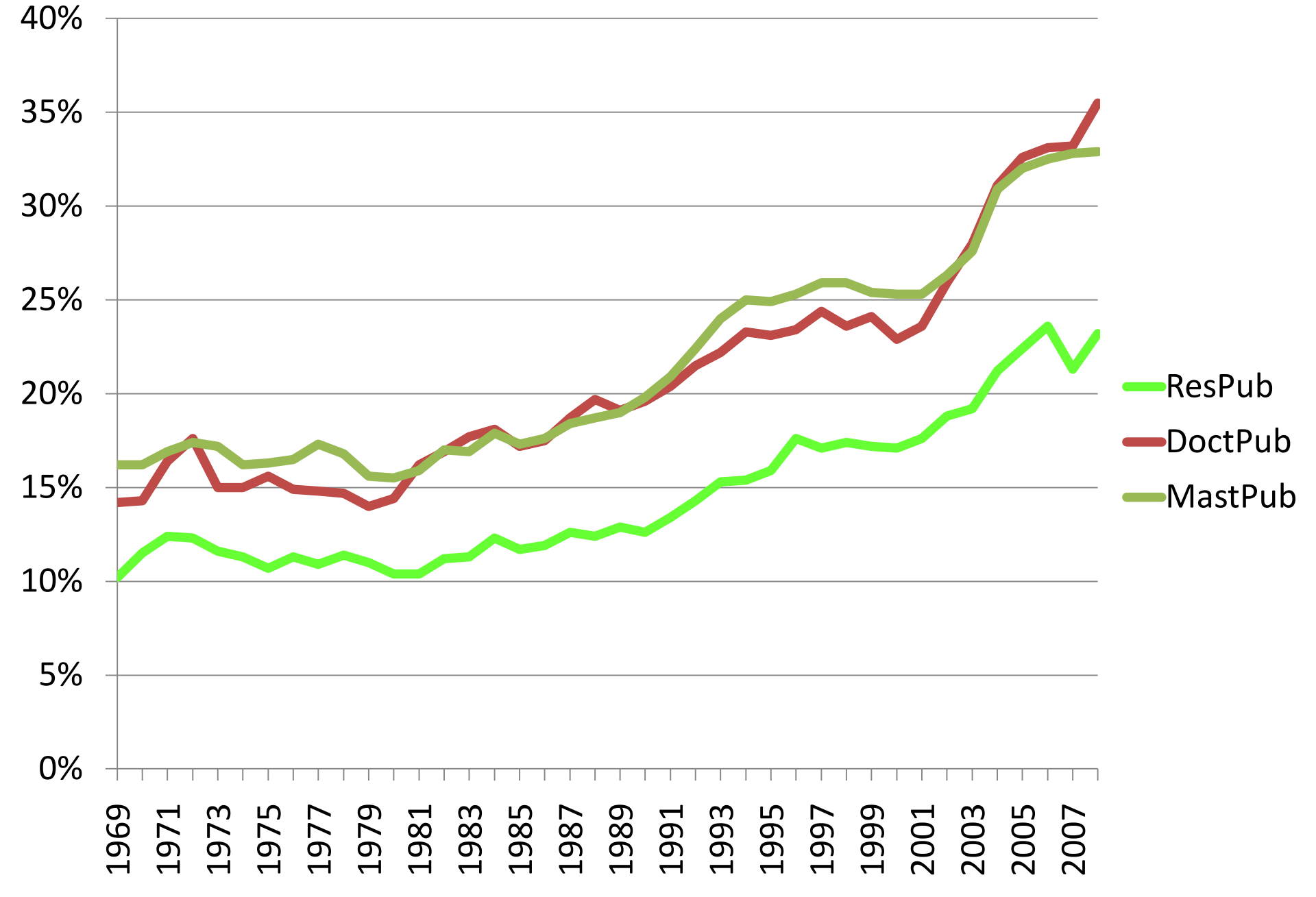
Median Total Current Revenues, Master's and LibArts



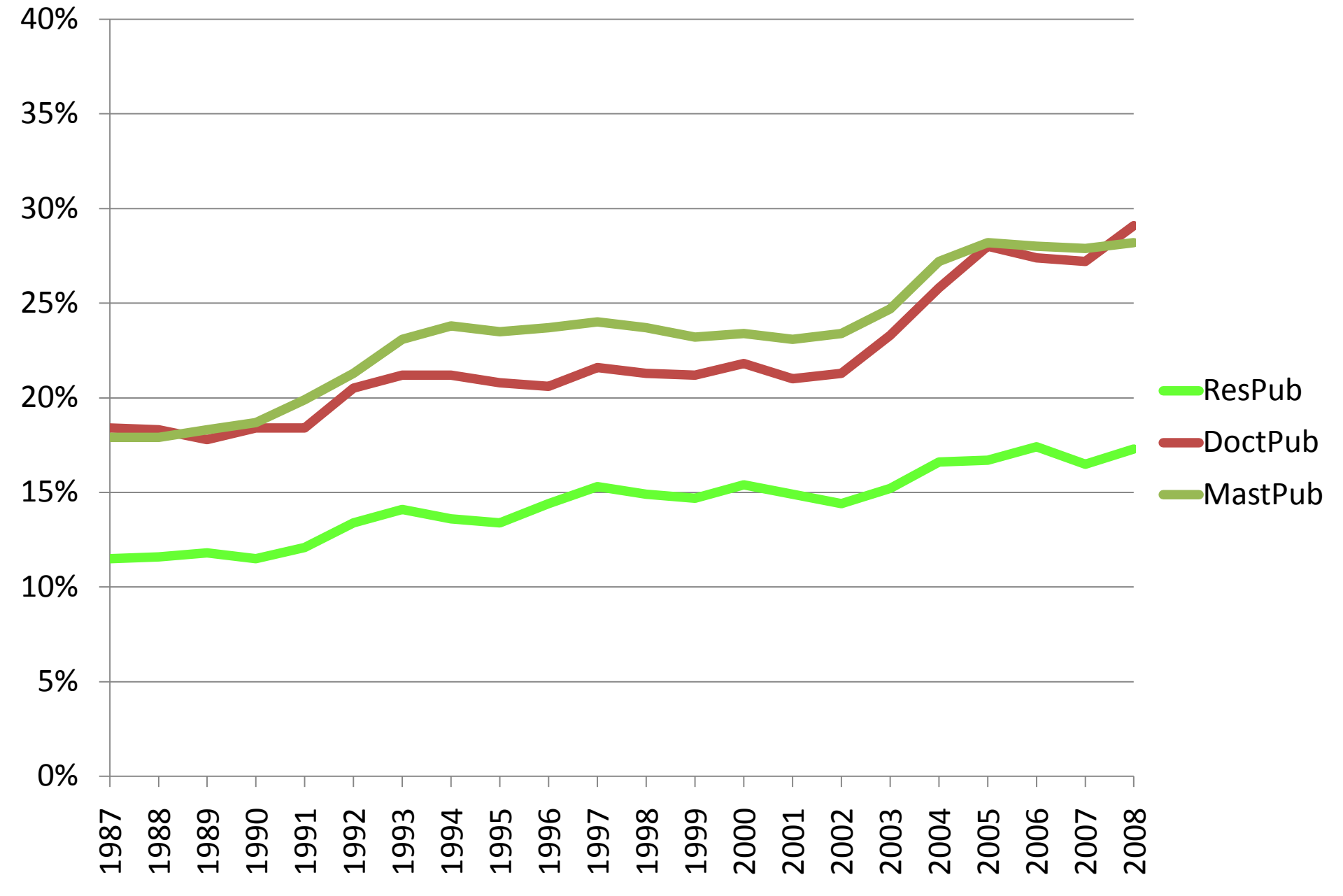
Median State Approp as % of Total Current Revenue



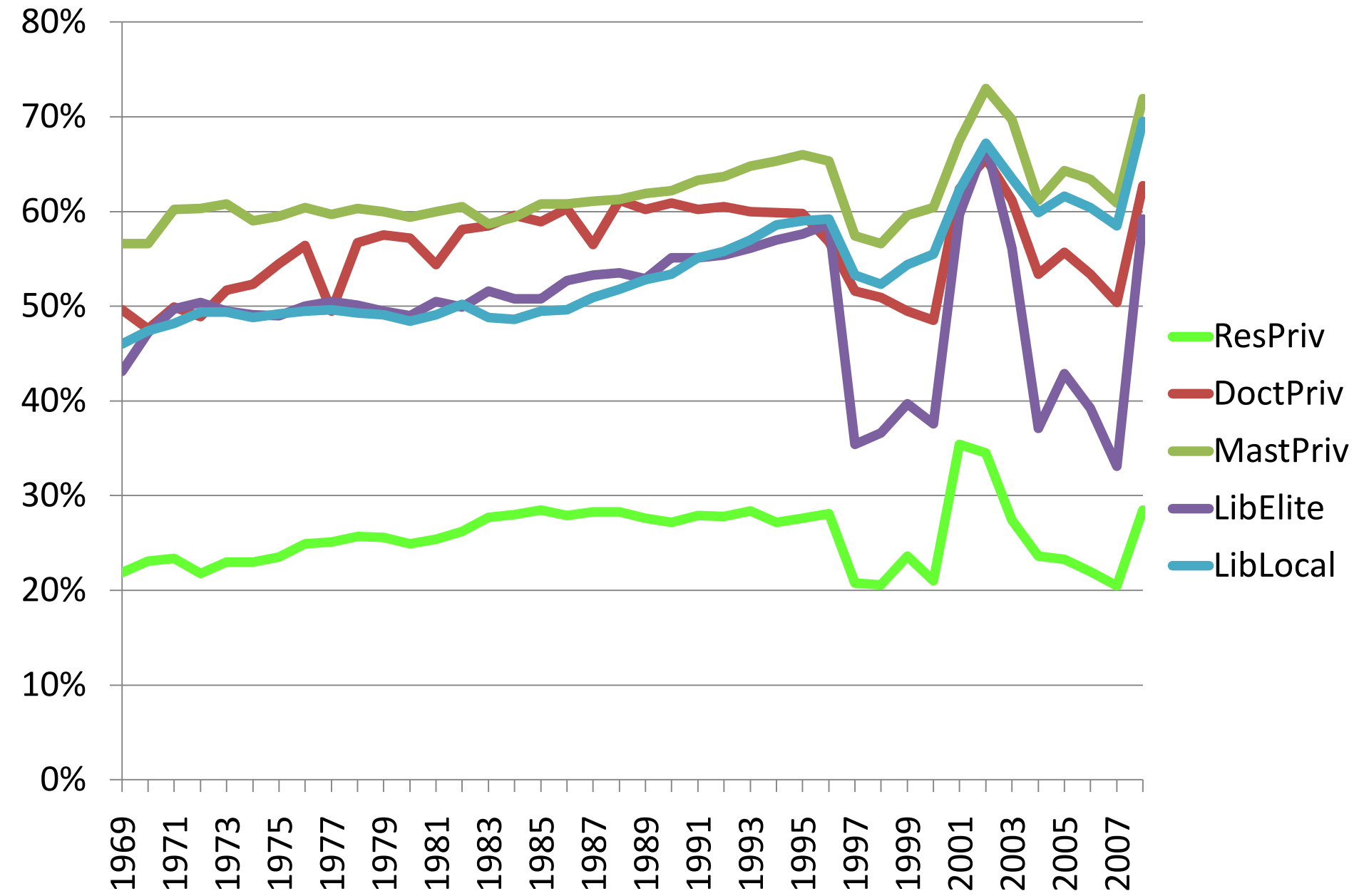
Tuition as % of Tot Curr Rev (w/ Allowances), Publics



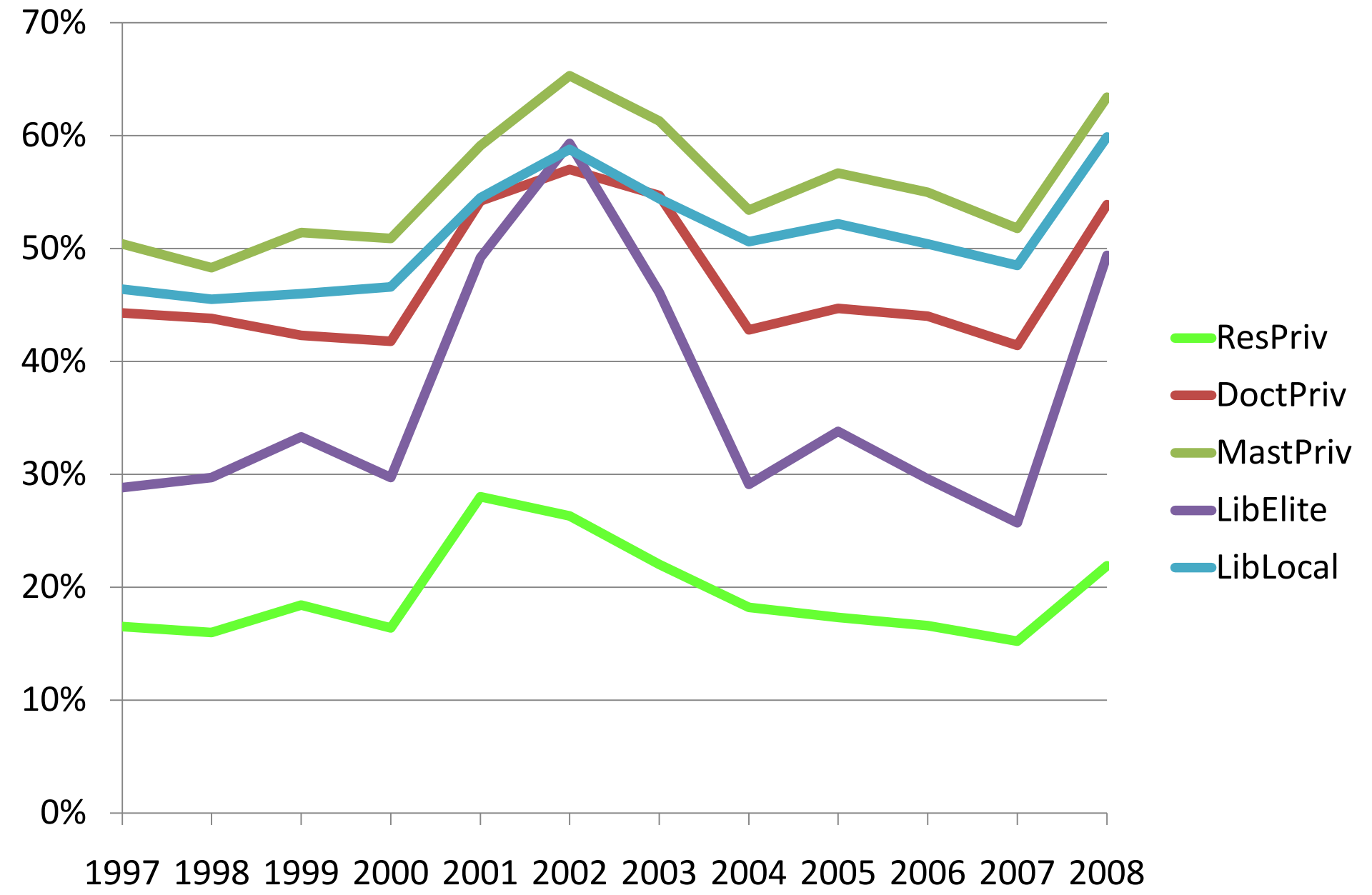
Tuition as % of Tot Curr Rev (No inst allowances)



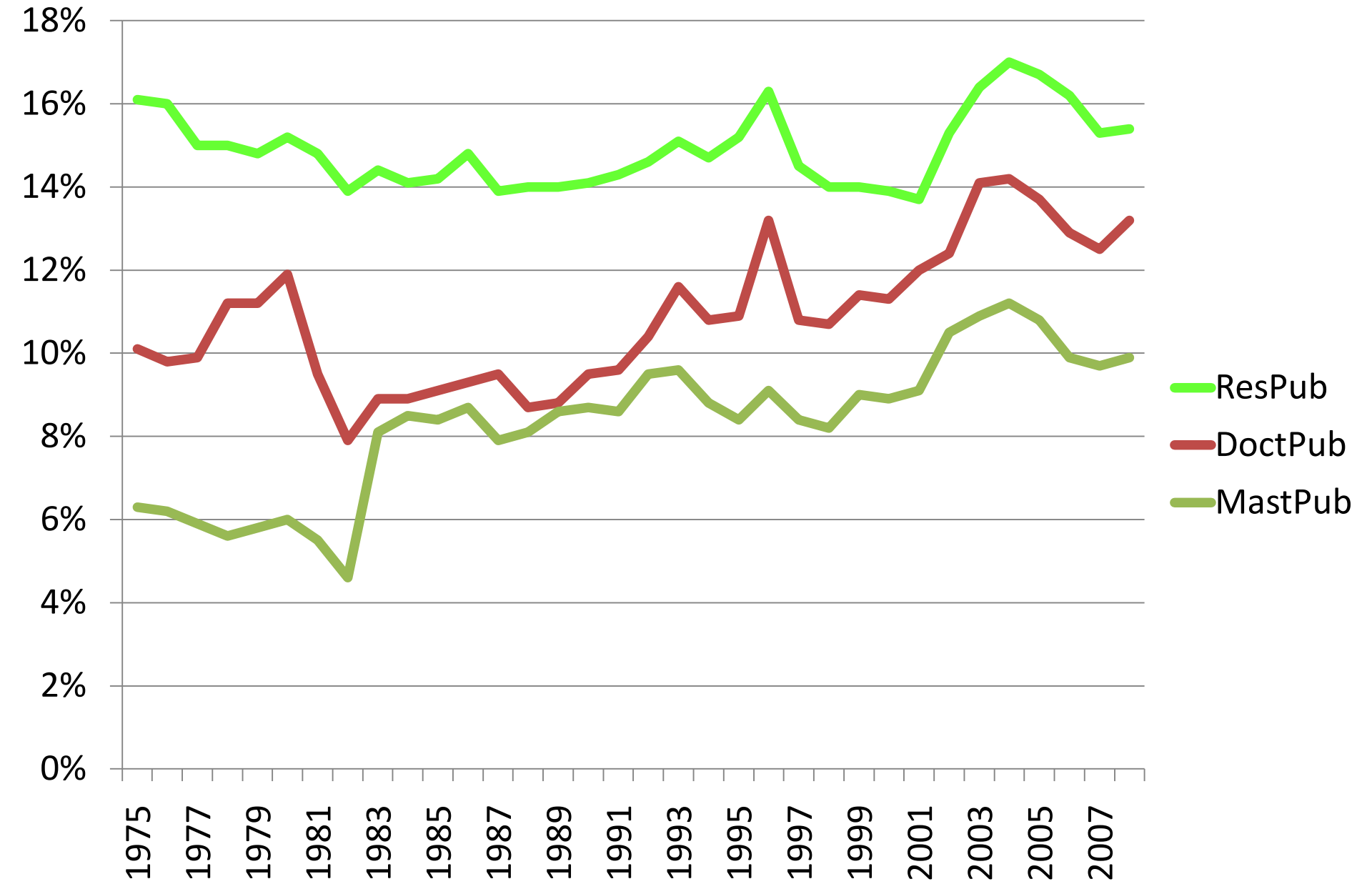
Tuition as % of Tot Curr Rev (w/ Allowances), Privates



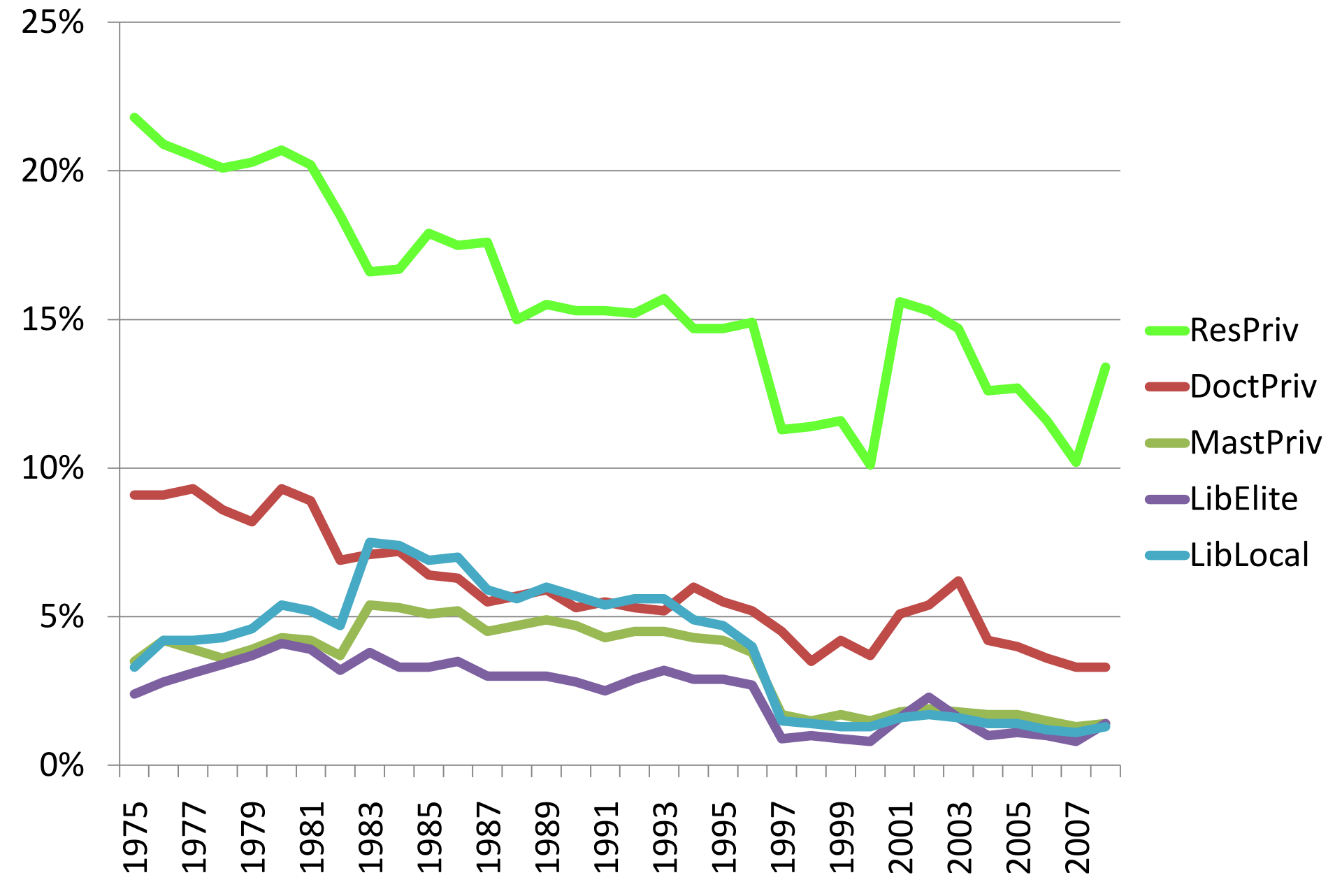
Tuition as % of Tot Curr Rev (No Inst Allowances)



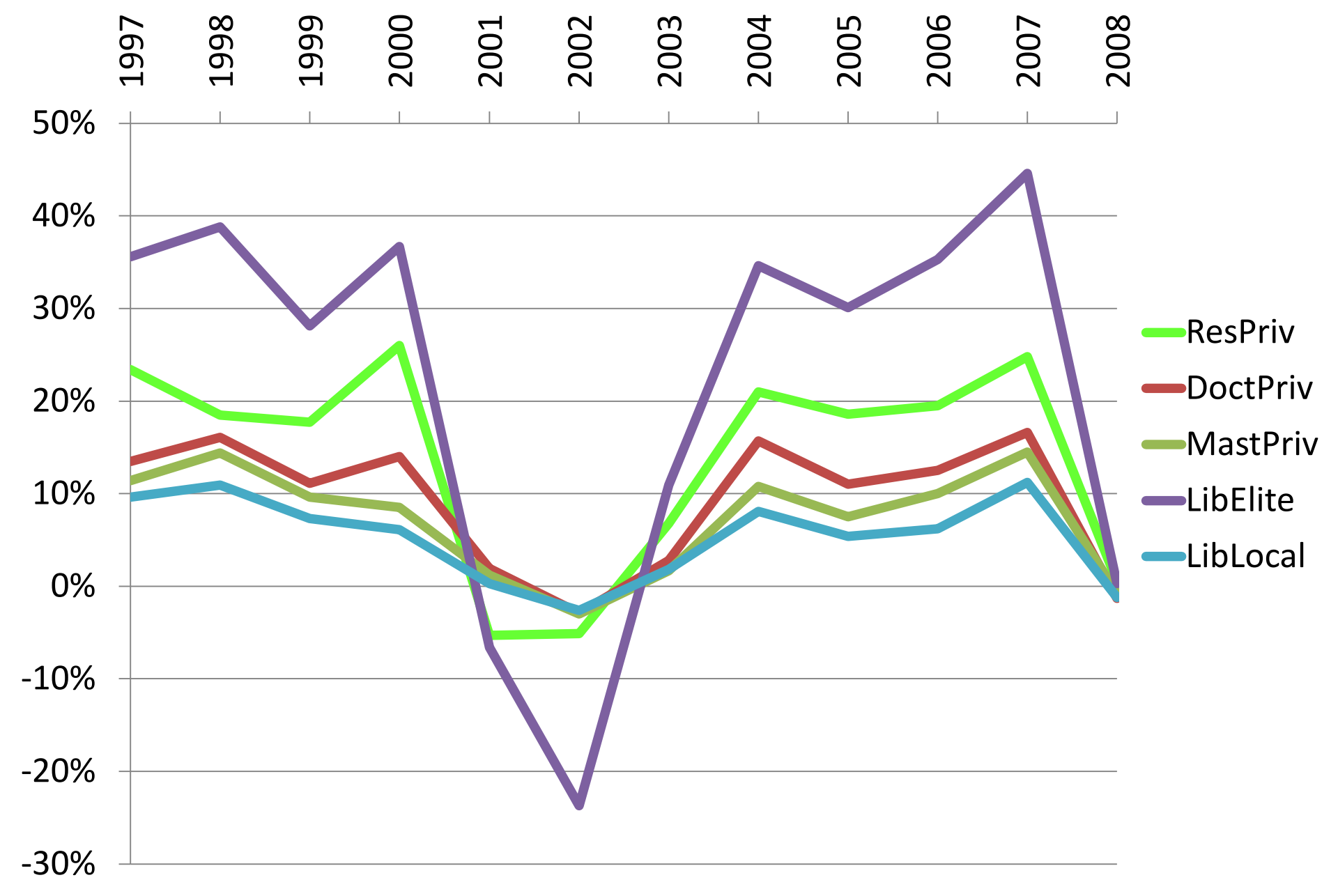
Federal Grants as % of Tot Curr Rev (w/ Allowances)



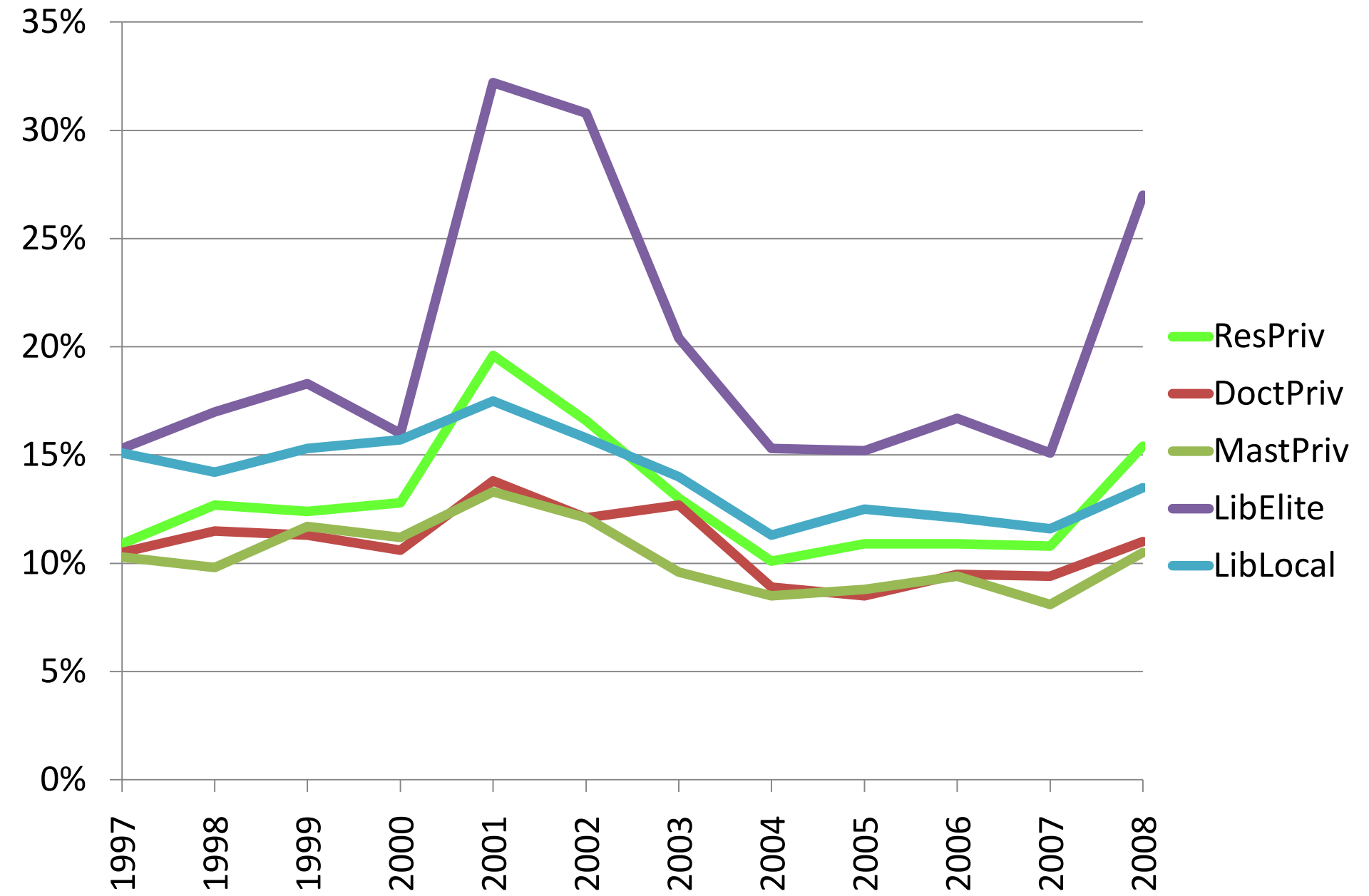
Federal Grants as % of Tot Curr Rev (w/ Allowances)



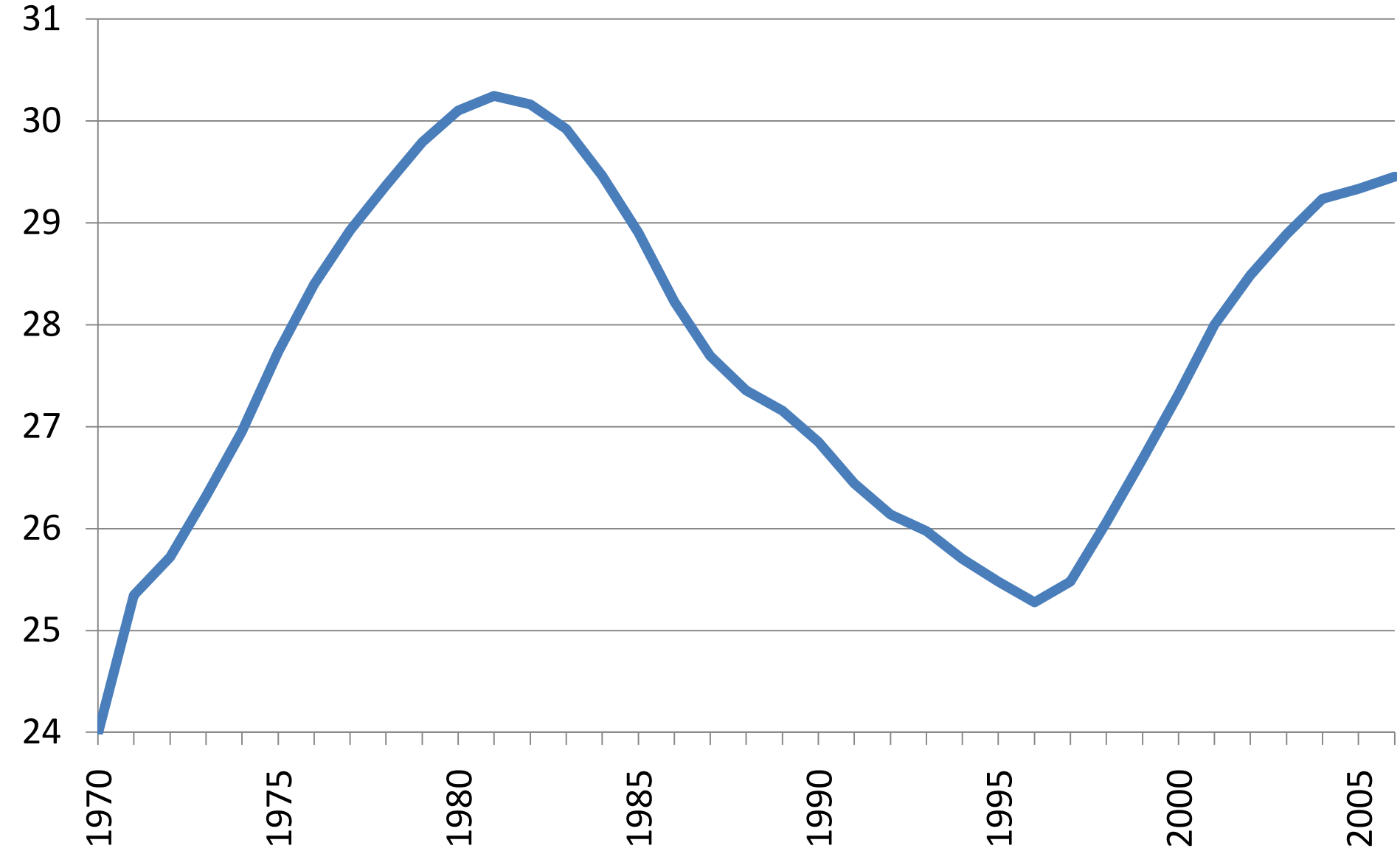
Endow Income as Pct of Tot Curr Rev (No Allowances)



Private Gifts as Pct of Tot Curr Rev (No Allowances)



Population (millions) of 18 to 24 year olds in the U.S., 1970-2006 (NCES, 2009, Table 15)



Non-Elite Freshman Enrollment, 25th and 50th Pctile

	MastPub		MastPriv		LibLocal	
	p25	p50	p25	p50	p25	p50
1981	-5.5%	1.9%	-6.5%	1.2%	-9.2%	3.0%
1982	-8.8%	-2.1%	-10.5%	-1.8%	-14.4%	-3.8%
1983	-10.2%	-2.4%	-13.7%	-6.3%	-17.0%	-5.8%
1984	-6.6%	-0.5%	-8.0%	-0.1%	-10.5%	0.9%
1985	-10.5%	-4.3%	-8.0%	-1.8%	-12.9%	0.0%
1986	-7.7%	-0.4%	-8.0%	-1.0%	-14.0%	-1.6%
1987	-7.0%	0.0%	-10.5%	-2.2%	-12.3%	-1.2%
1988	-2.0%	4.6%	-5.7%	3.8%	-8.4%	3.2%
1989	-2.0%	5.4%	-2.6%	4.7%	-6.4%	3.5%
1990	-6.6%	0.0%	-8.6%	-2.4%	-11.1%	-2.0%
1991	-10.8%	-4.5%	-13.5%	-5.8%	-13.4%	-3.2%
1992	-7.8%	-1.5%	-9.5%	-2.2%	-11.1%	0.0%
1993	-10.1%	-2.4%	-6.9%	0.1%	-7.2%	2.5%
1994	-6.7%	-0.7%	-7.3%	-1.2%	-8.4%	1.6%
1995	-6.5%	-0.1%	-5.1%	1.4%	-11.4%	-0.7%
1996	-5.3%	2.1%	-5.6%	0.3%	-7.4%	1.6%

Event History Modeling

- Used to study the timing of events
  - e.g., graduation, dropout, policy adoption, academic program adoption
- Hazard of adopting degree in year X, given that haven't adopted up to that point
- Discreet-time equivalent of a Cox proportional hazard model
- Time-constant and time-varying covariates
- Add time-varying coefficients in the future
- Show regression results in MS OneNot

Future Research (post dissertation)

- Become an expert on higher education finance, including knowledge of change in accounting standards
- Do institutions adopt degrees demanded by the labor market?
  - Shift in policy focus from access, to persistence, to labor market outcomes
  - But predominant focus is on students
  - I argue that the self-interested behavior of organizations affects the opportunities available to students
- Make a freely available HEGIS/IPEDS panel dataset
  - Incorporate Delta Cost Project data