The Adoption Curve
Can EHR Match the Success of the ATM?

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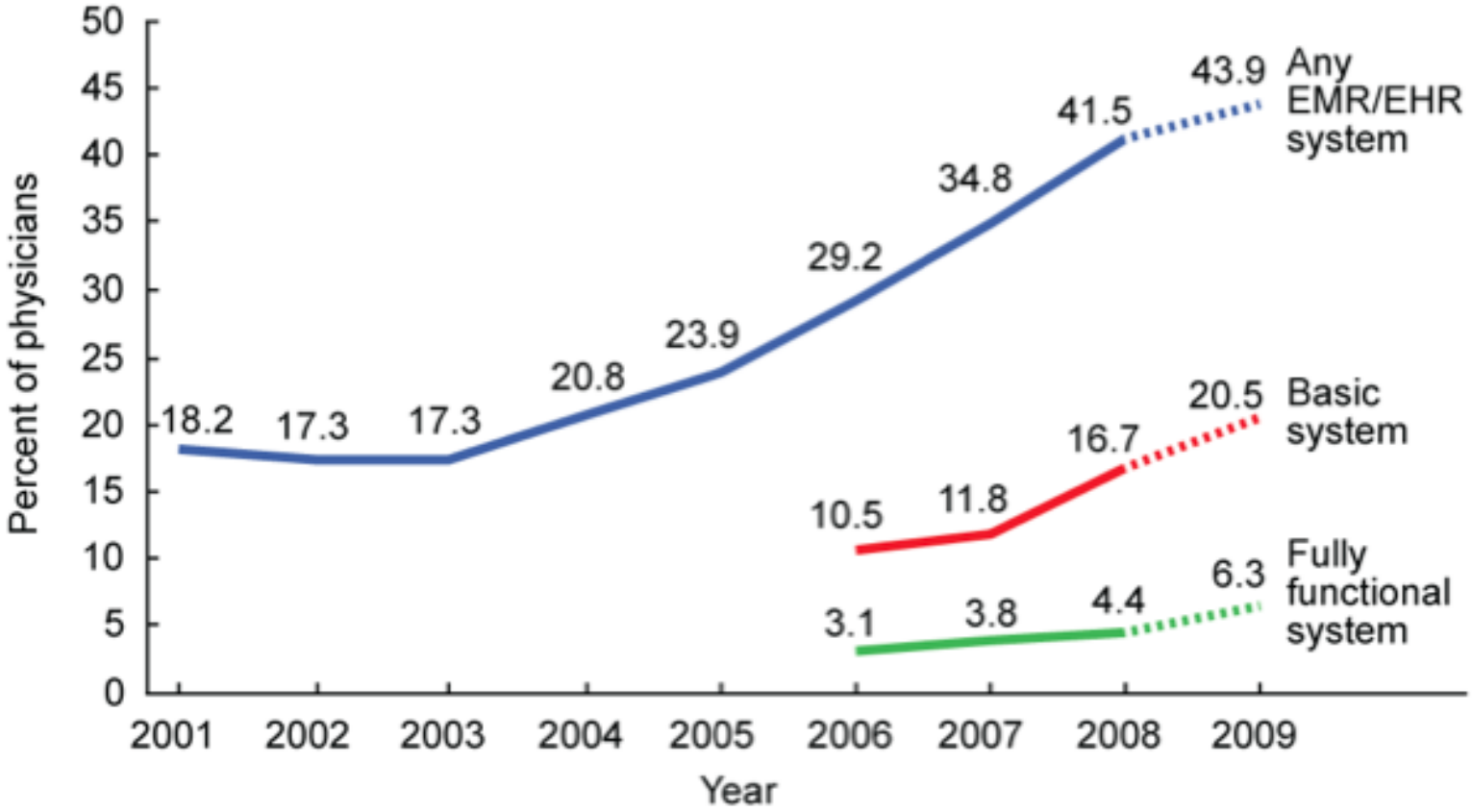
EHR & Technology Adoption

- **EHR – Electronic Health Records**
- **General Consumer Technology Adoption**
- **ATM Technology Adoption**
- **EHR versus ATM Technology Adoption**
- **Final Thoughts**

ELECTRONIC HEALTH RECORDS

EHR

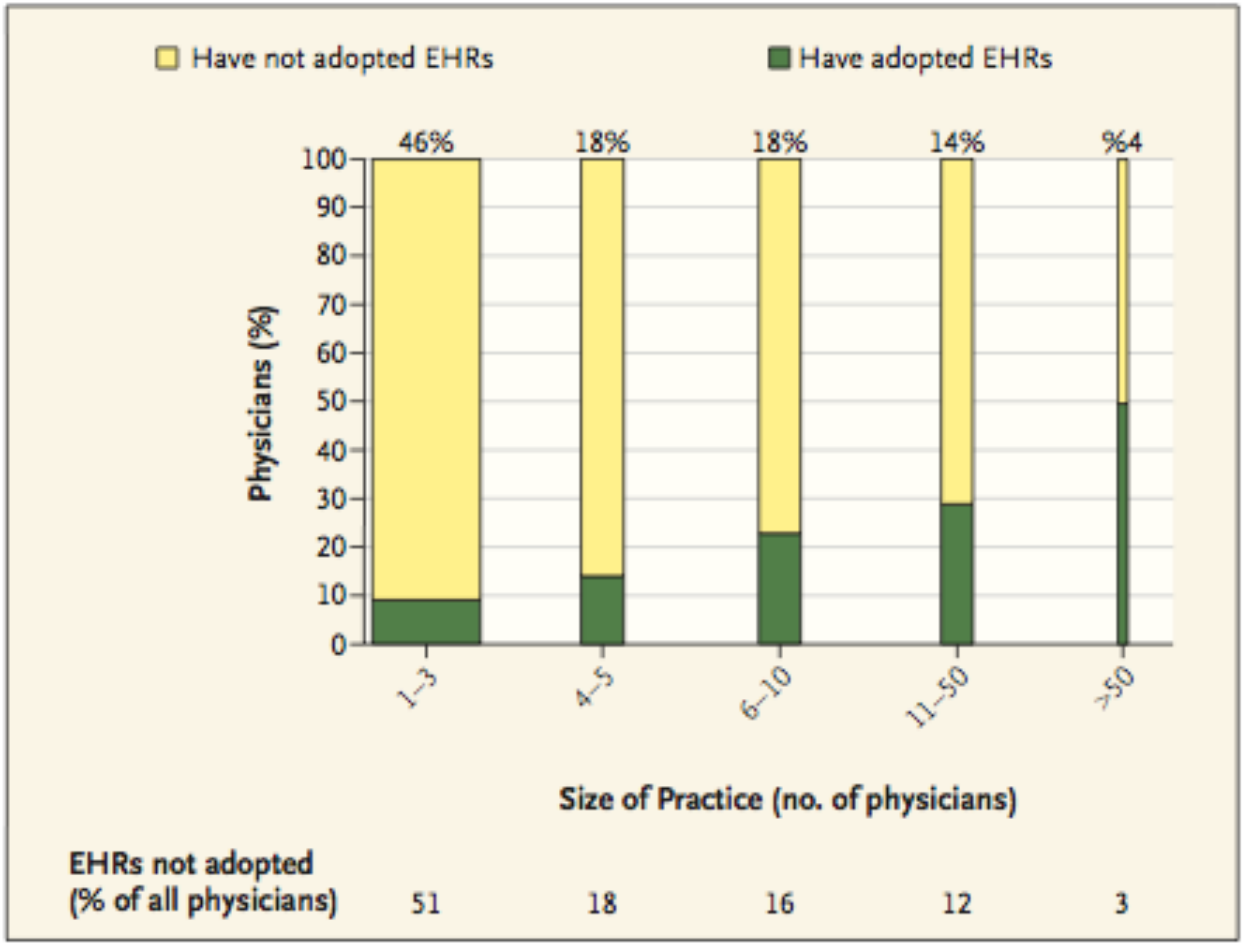
EHR
Percentage Office-based Physicians



Source: Hsiao, Chun-Ju, et al., "Electronic medial record/electronic health record use by office-based physicians: United States, 2008 and preliminary 2009," CDC National Center for Health Statistics, December, 2009, p. 4.

EHR

Rates of Adoption by Practice Size

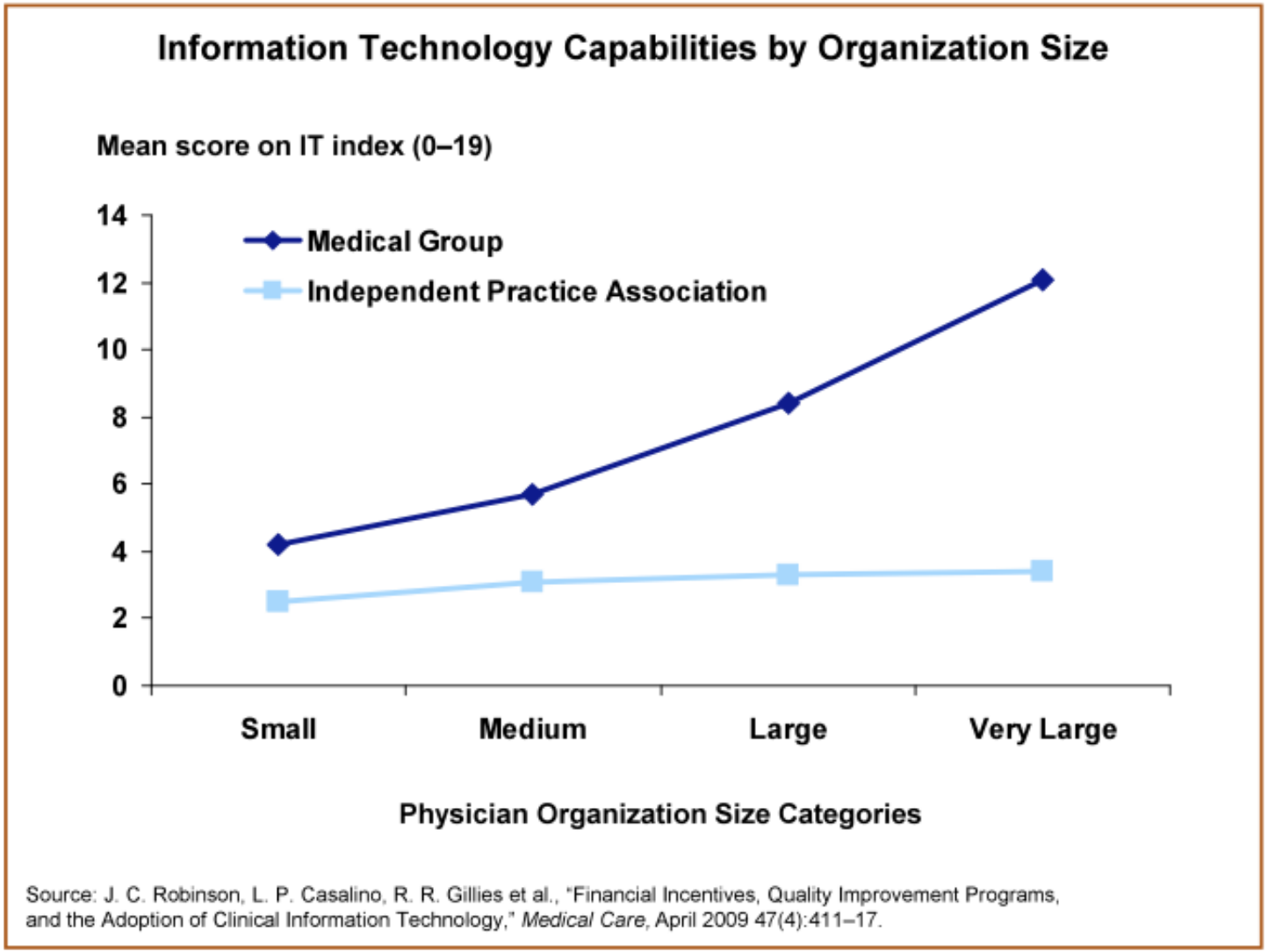


Rates of Adoption of Electronic Health Records According to Practice Size.

Source: Shea, Steven, MD, and George Hripcsak, MD, "Accelerating the Use of Electronic Health Records in Physician Practices," N ENGL J MED 362;3, January 21, 2010.

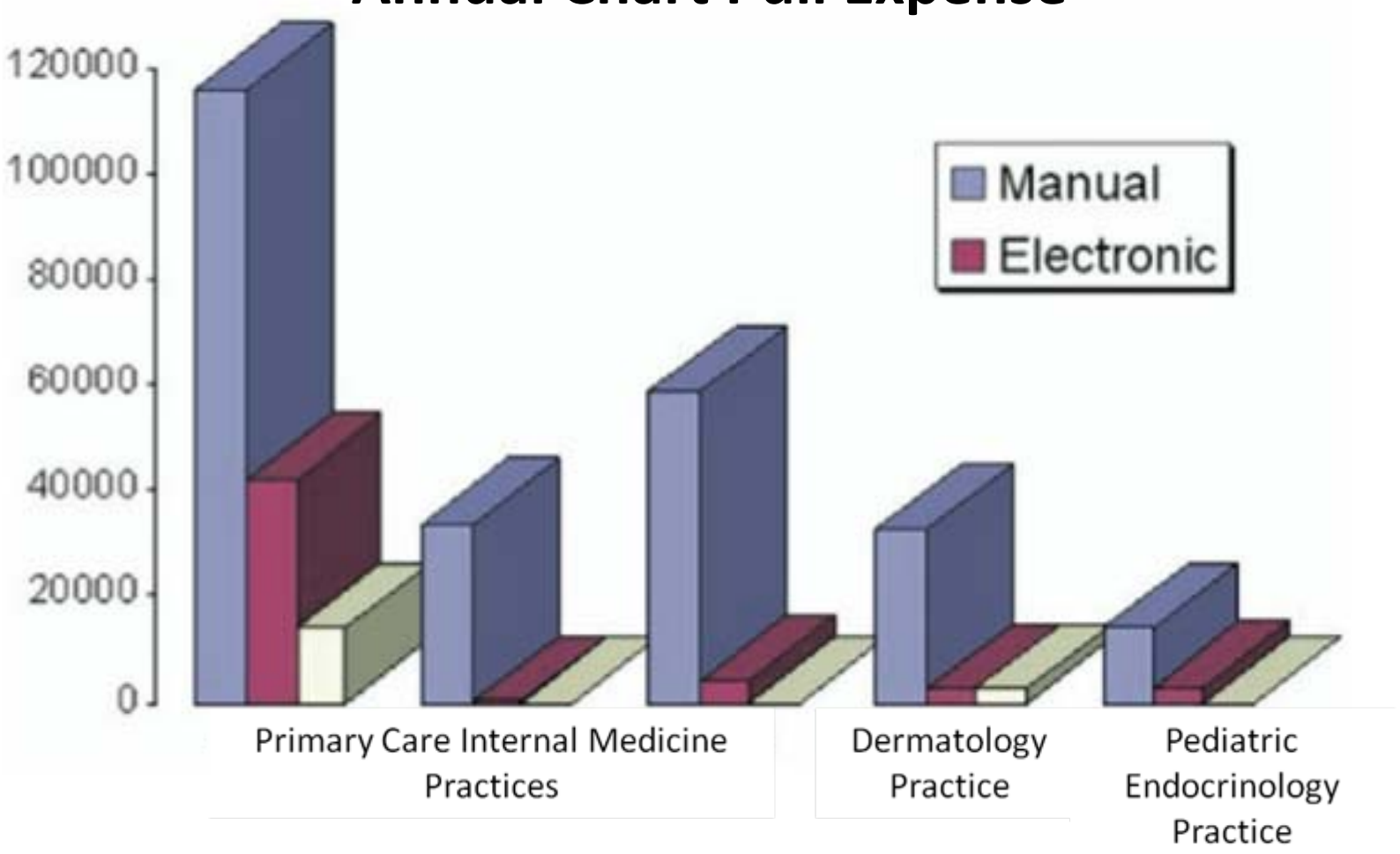
EHR

Technology Capability by Practice Size



Source: J. C. Robinson, L. P. Casalino, R. R. Gillies et al., "Financial Incentives, Quality Improvement Programs, and the Adoption of Clinical Information Technology," *Medical Care*, April 2009 47(4):411–17.

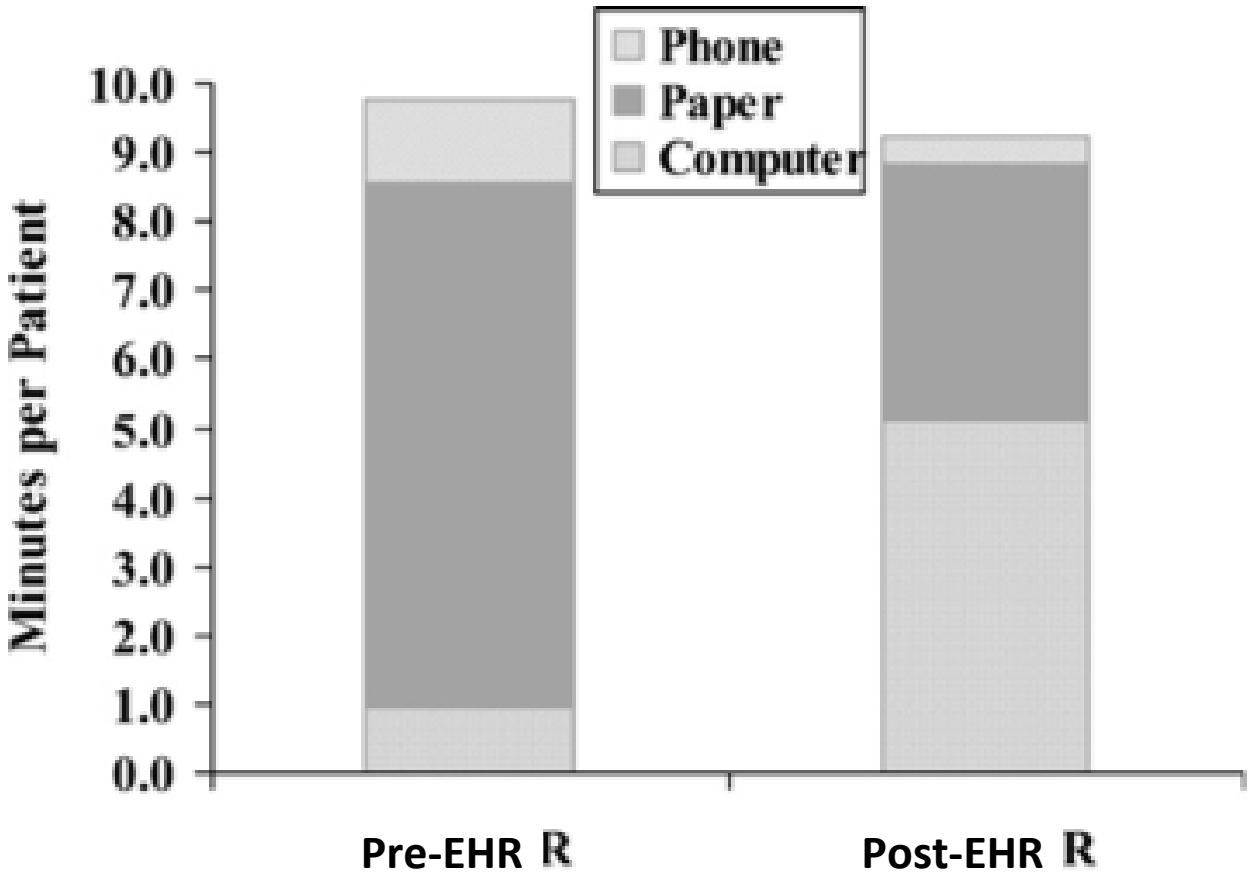
EHR
Annual Chart Pull Expense



Source: Grieger, Dara L, MD, et al., "A Pilot Study to Document the Return on Investment for Implementing an Ambulatory Electronic Health Record at an Academic Medical Center," Journal of the American College of Surgeons, 2008.02.074, p. 91.

EHR

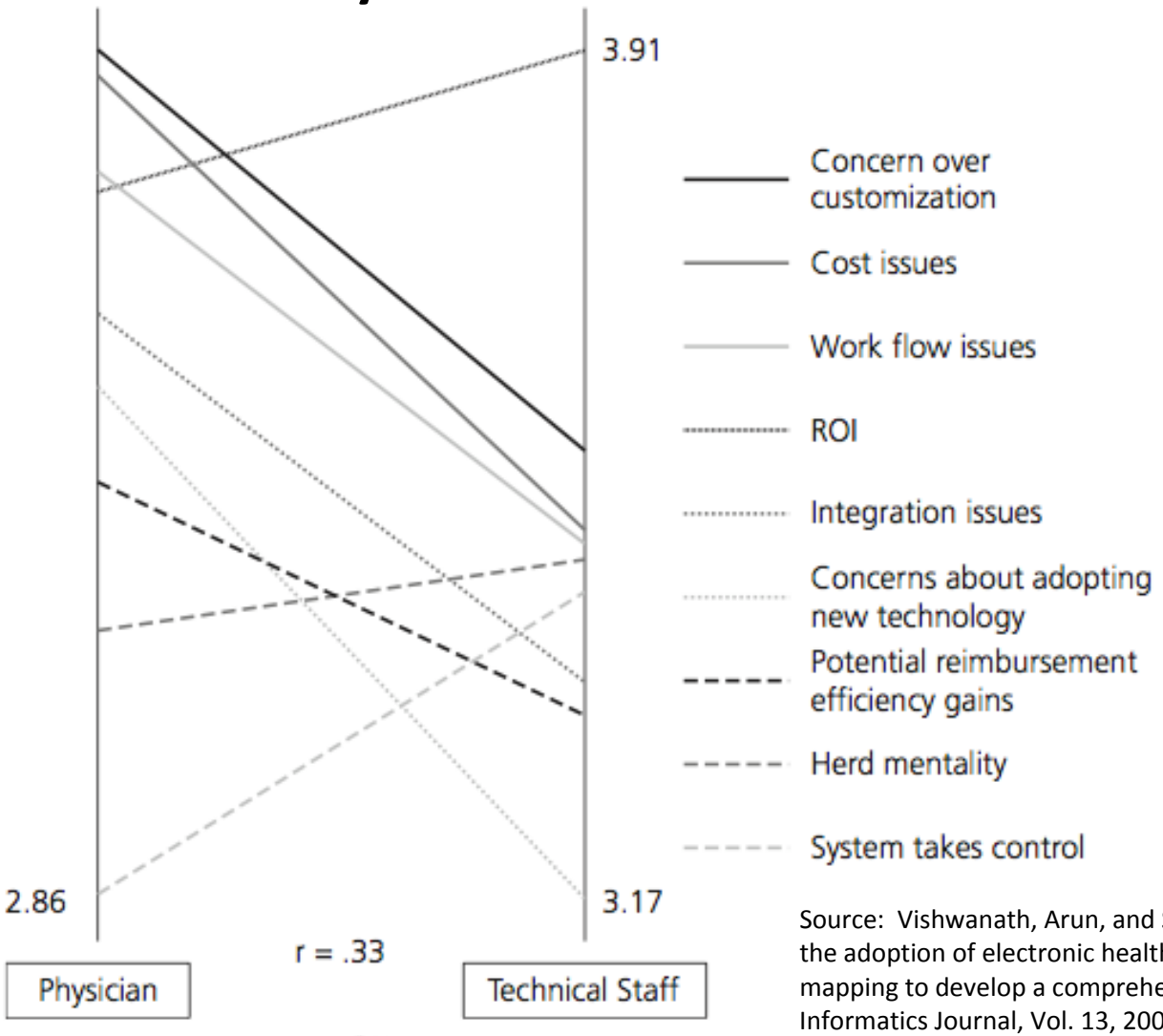
Minutes per Patient Indirect Care Activities



Source: Pizziferri, Lisa, et al., "Primary care physician time utilization before and after implementation of an electronic health record: A time-motion study," Journal of Biomedical Informatics 38 (2005), p. 182.

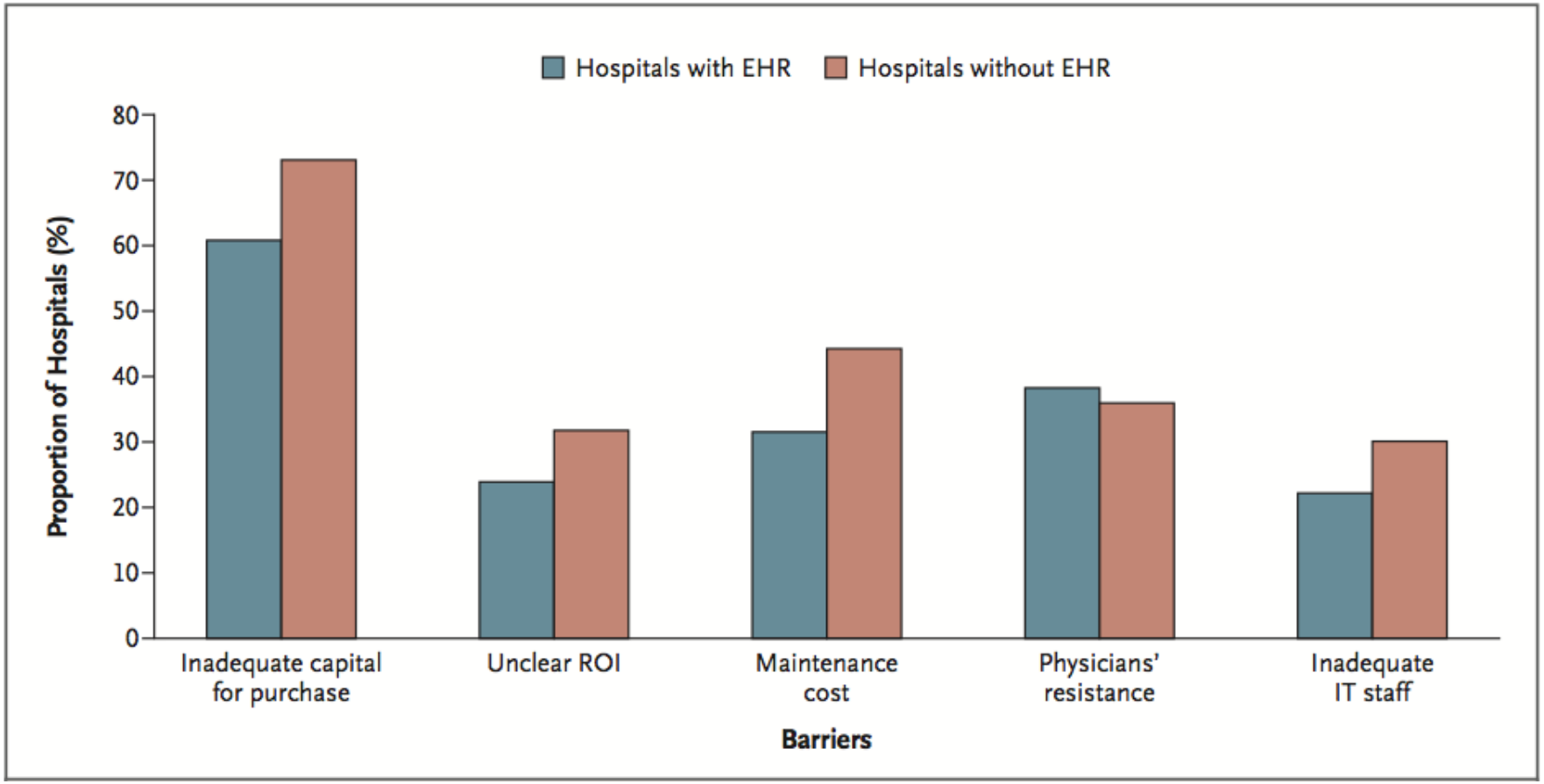
EHR – Comparative Significance Ratings

Physicians vs. Technical Staff



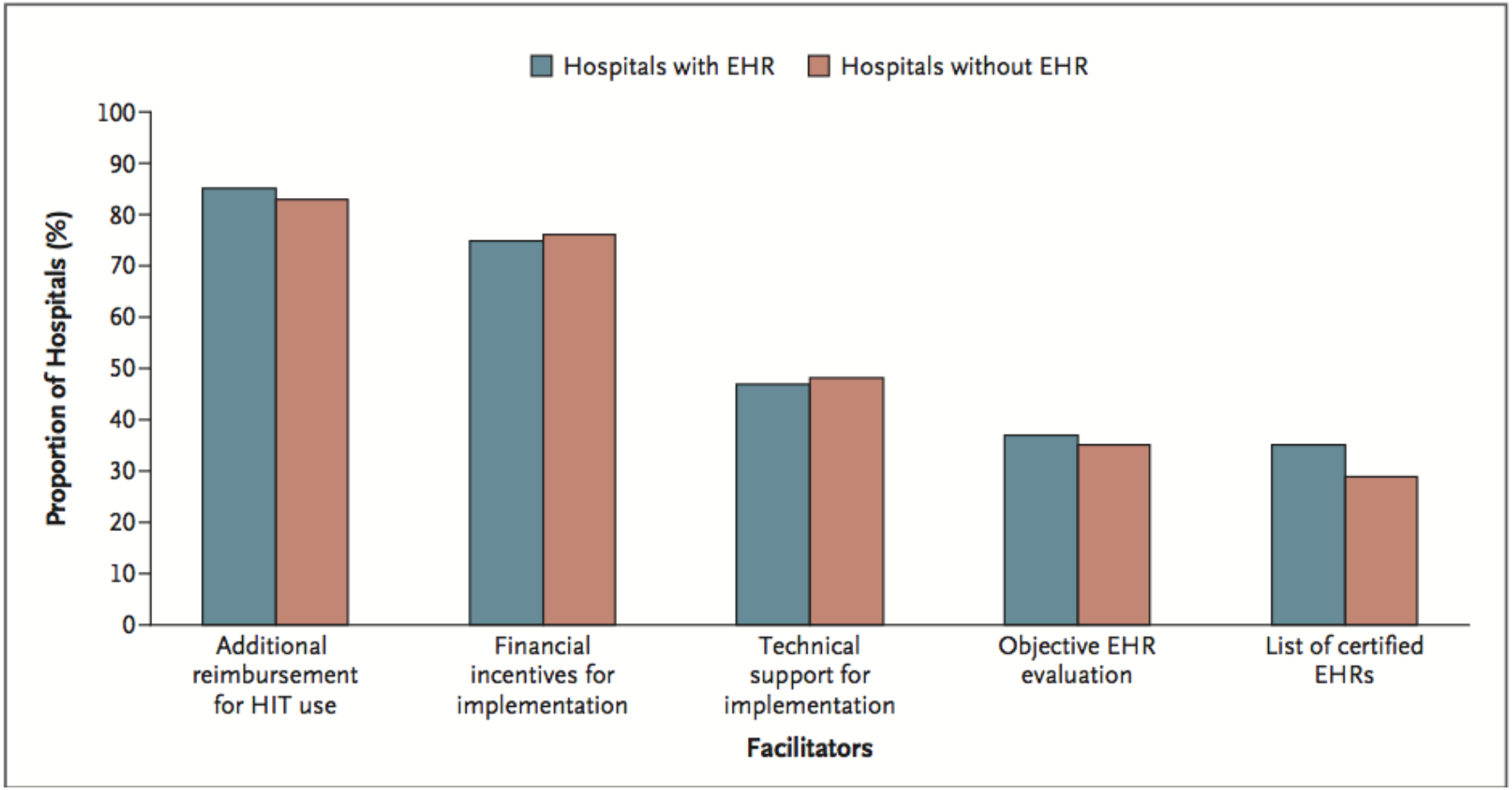
Source: Vishwanath, Arun, and Susan D. Scamurra, "Barriers to the adoption of electronic health records: using concept mapping to develop a comprehensive empirical model," Health Informatics Journal, Vol. 13, 2007, p. 130.

EHR
Major Perceived Barriers



Source: Jha, Ashish K., M.D., M.P.H. et al., "Use of Electronic Health Records in U.S. Hospitals," The New England Journal of Medicine, 360; 16, April 16, 2009, p. 1635.

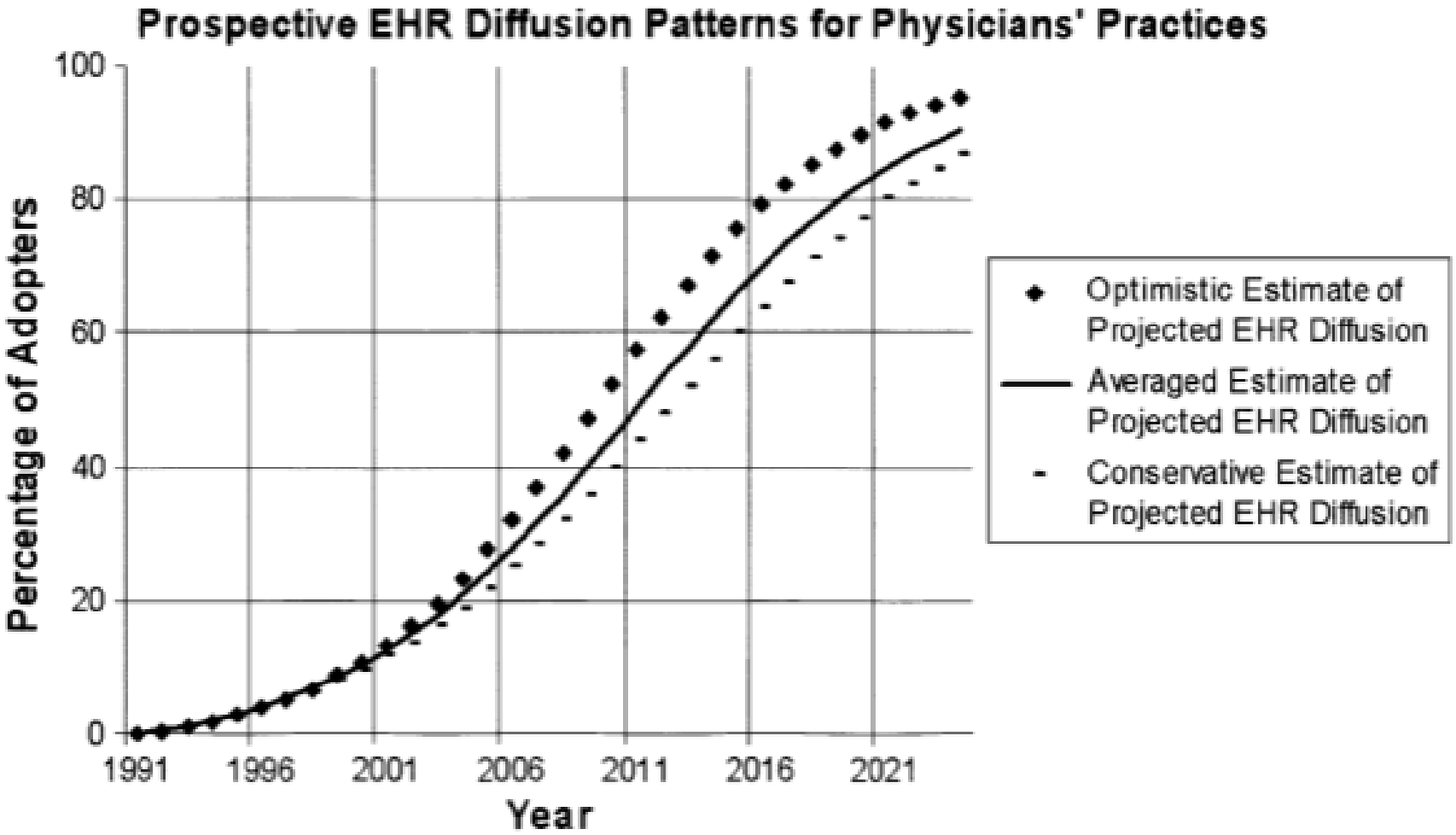
EHR
Major Perceived Facilitators



Source: Jha, Ashish K., M.D., M.P.H. et al., "Use of Electronic Health Records in U.S. Hospitals," The New England Journal of Medicine, 360; 16, April 16, 2009, p. 1636.

EHR

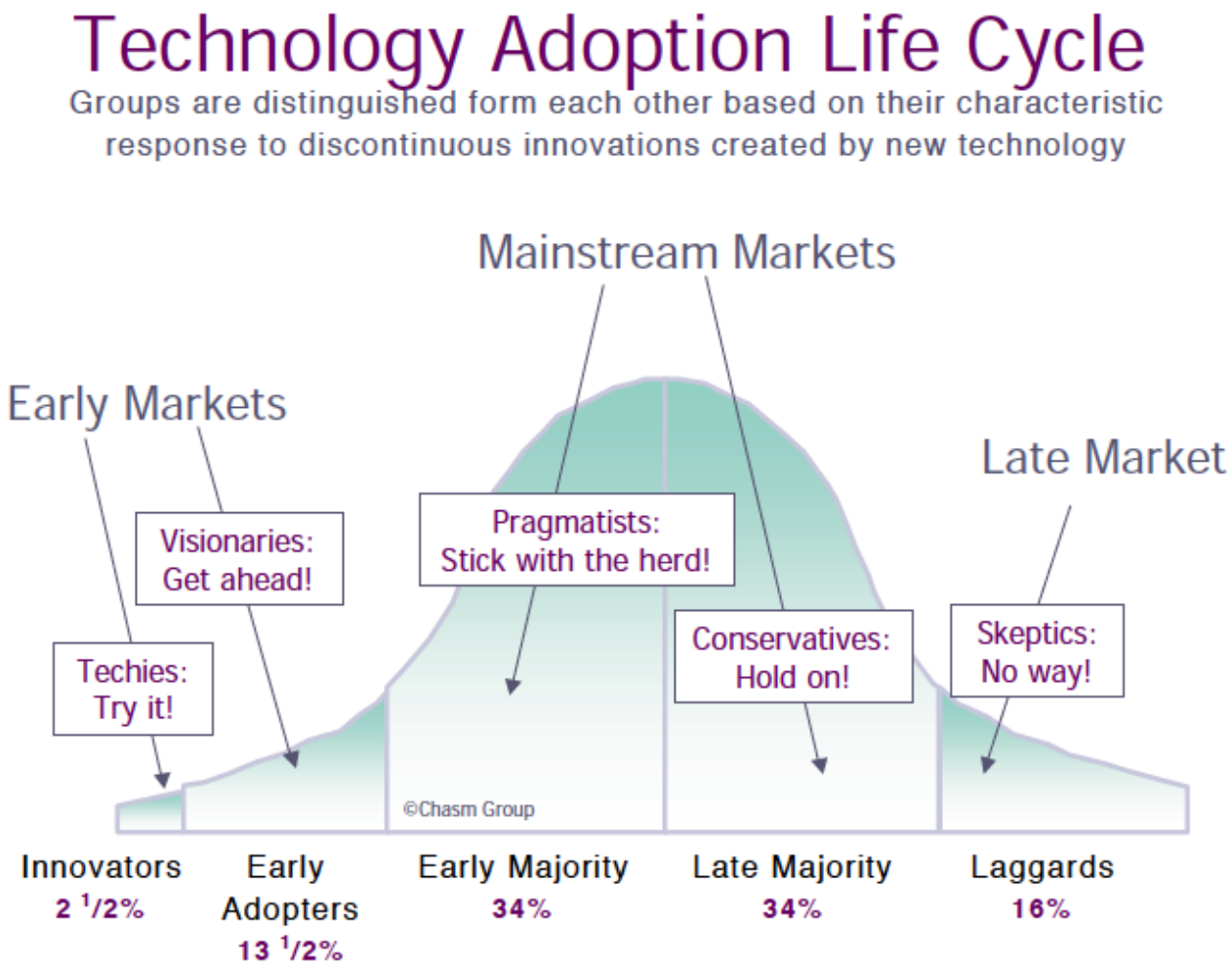
Empirically-based Predictions



Source: Ford, Eric W, et al., "Predicting the Adoption of Electronic Health Records by Physicians: When Will Health Care be Paperless?," Journal of the American Medical Informatics Association, Vol. 13, 2006, p. 108.

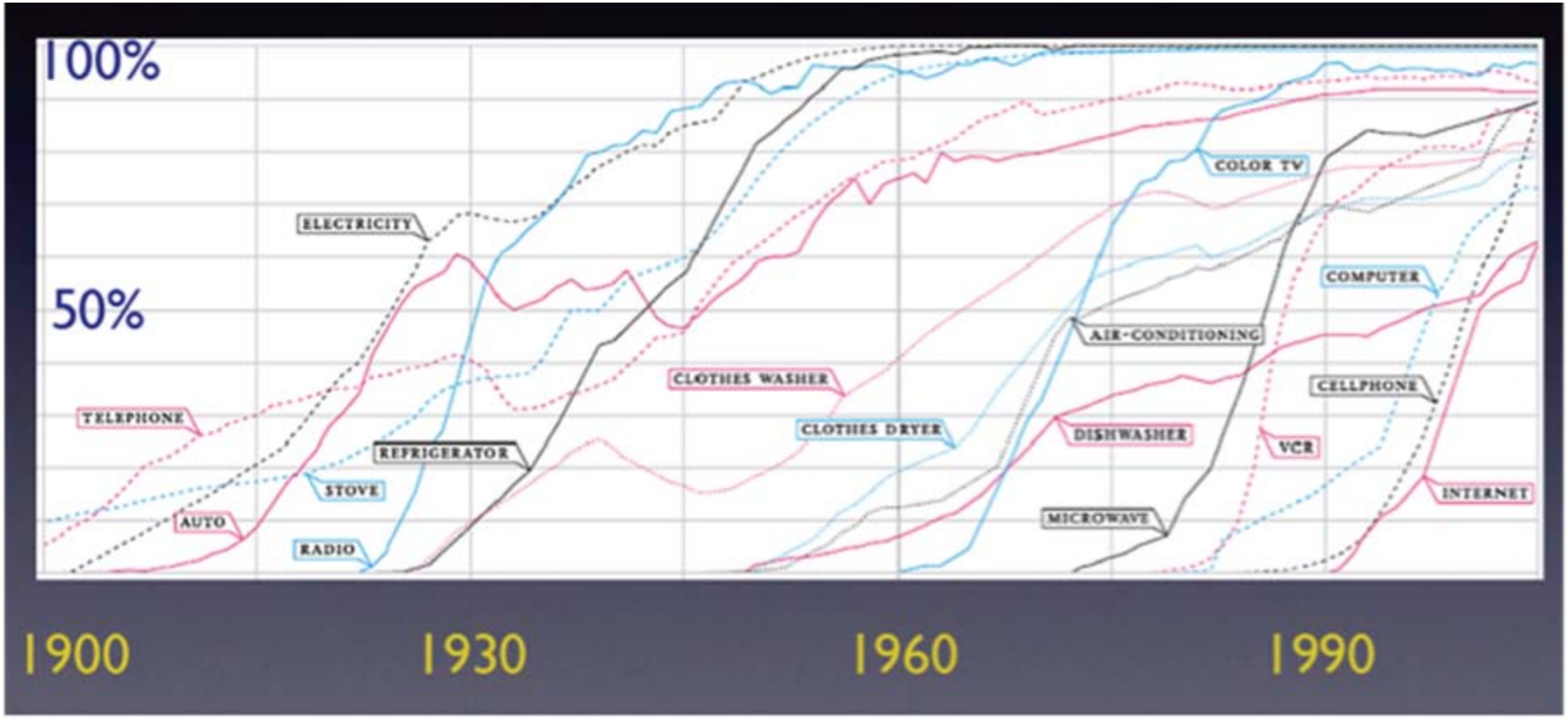
GENERAL CONSUMER TECHNOLOGY ADOPTION

Technology Adoption – Life Cycle



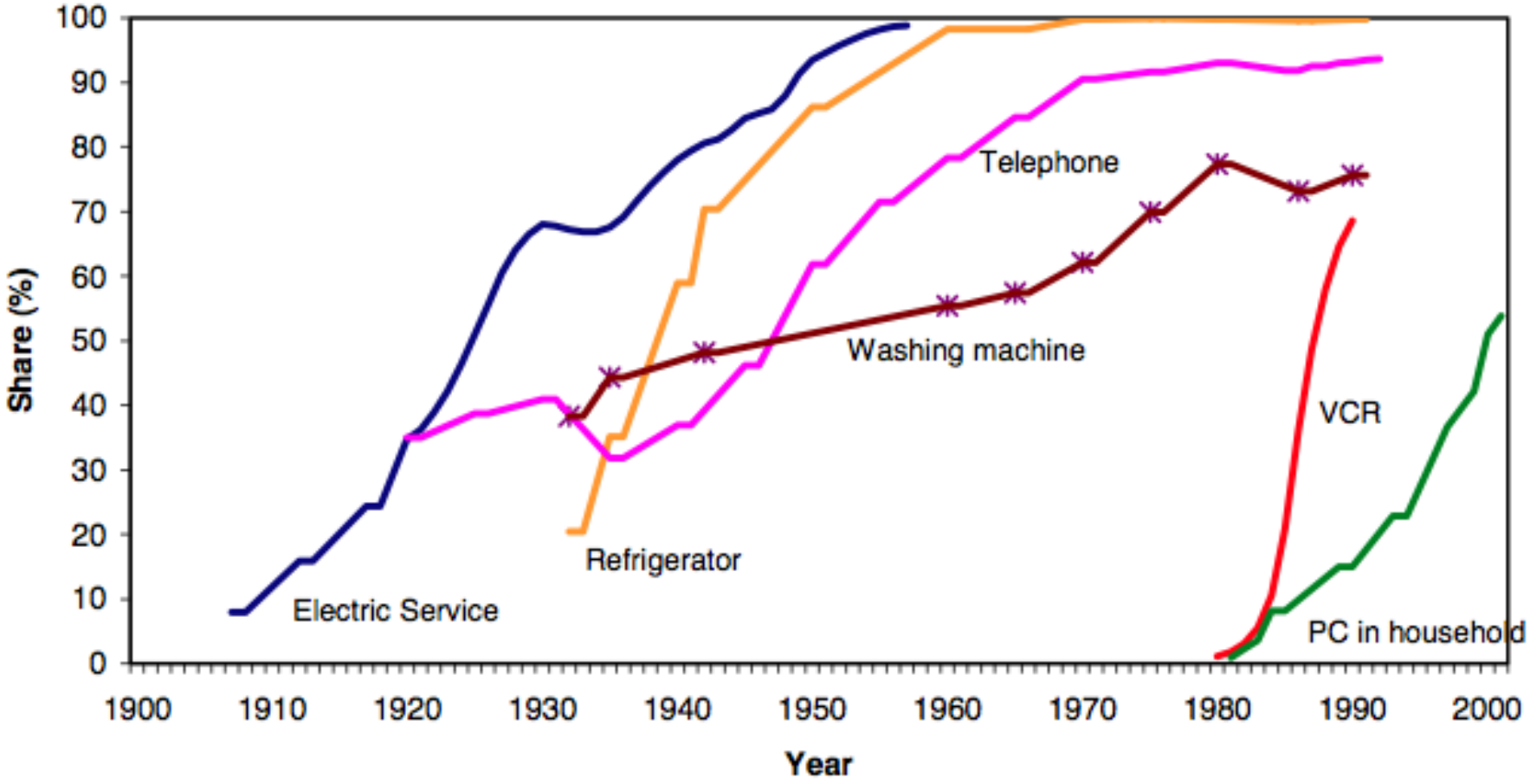
Source: Most, C. Maxine, "The Biometrics Industry: Leveraging the Technology Adoption Cycle," Biometrics 2001, London, England, November 29-30, 2001, p. 5.

Technology Adoption
Historical Perspective



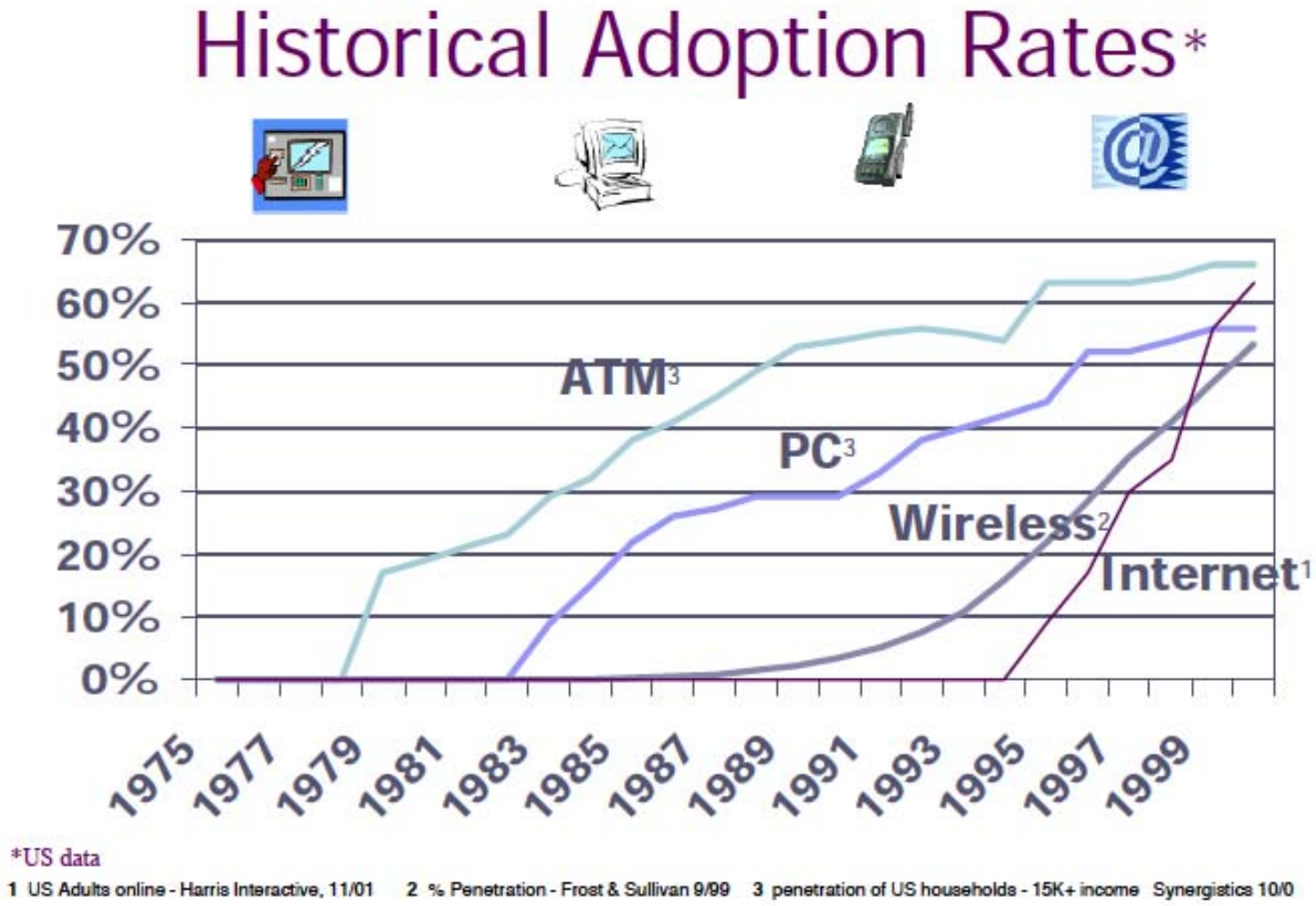
Source: Catlett, Charlie, "Technology adoption rates: historical perspective," International Science Grid This Week, Argonne National Laboratory, http://www.isgtw.org/?pid=1001793, accessed September 10, 2010.

Technology Adoption – Selected Products



Source: Hall, Bronwyn, H. and Beethika Khan, "New Economy Handbook," November 2002, p. 30.

Technology Adoption – Historical Rates

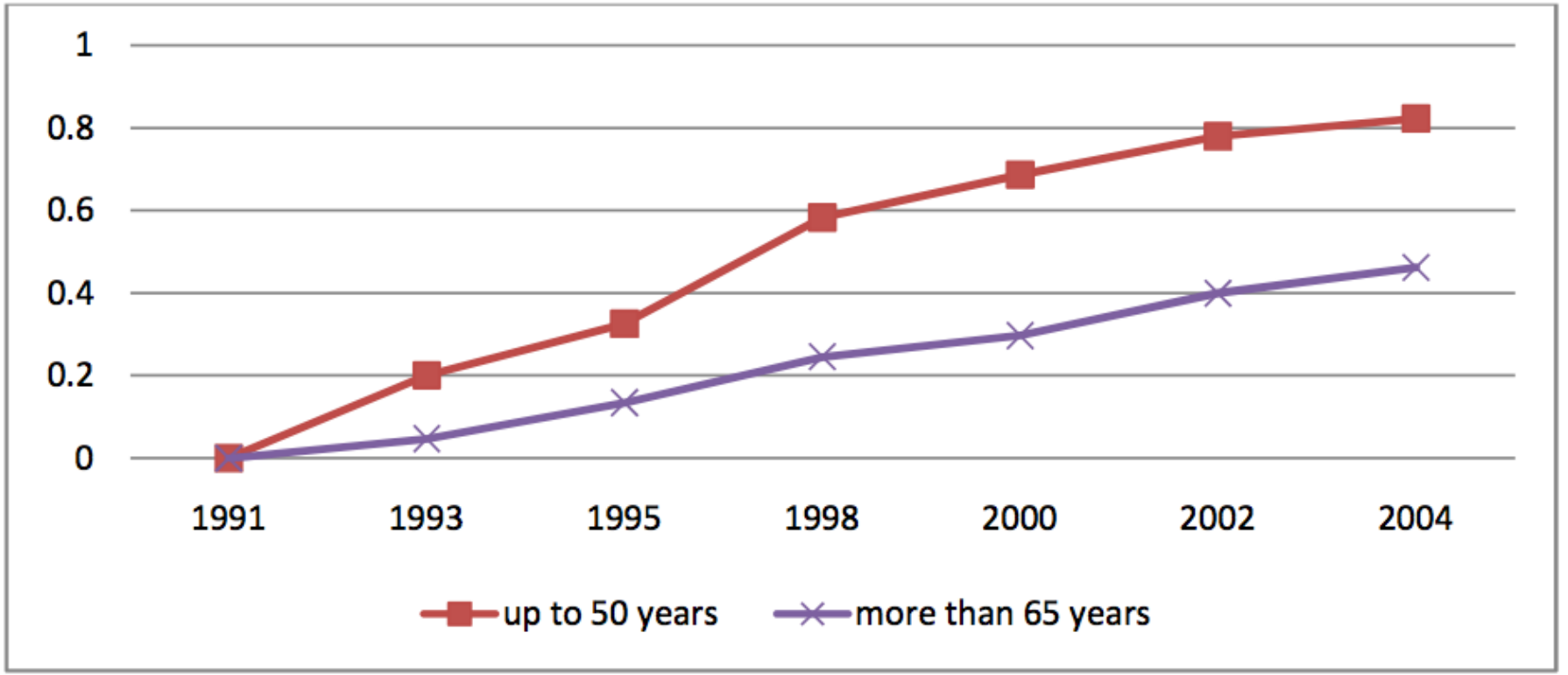


Source: Most, C. Maxine, "The Biometrics Industry: Leveraging the Technology Adoption Cycle," Biometrics 2001, London, England, November 29-30, 2001, p. 6.

ATM
TECHNOLOGY ADOPTION

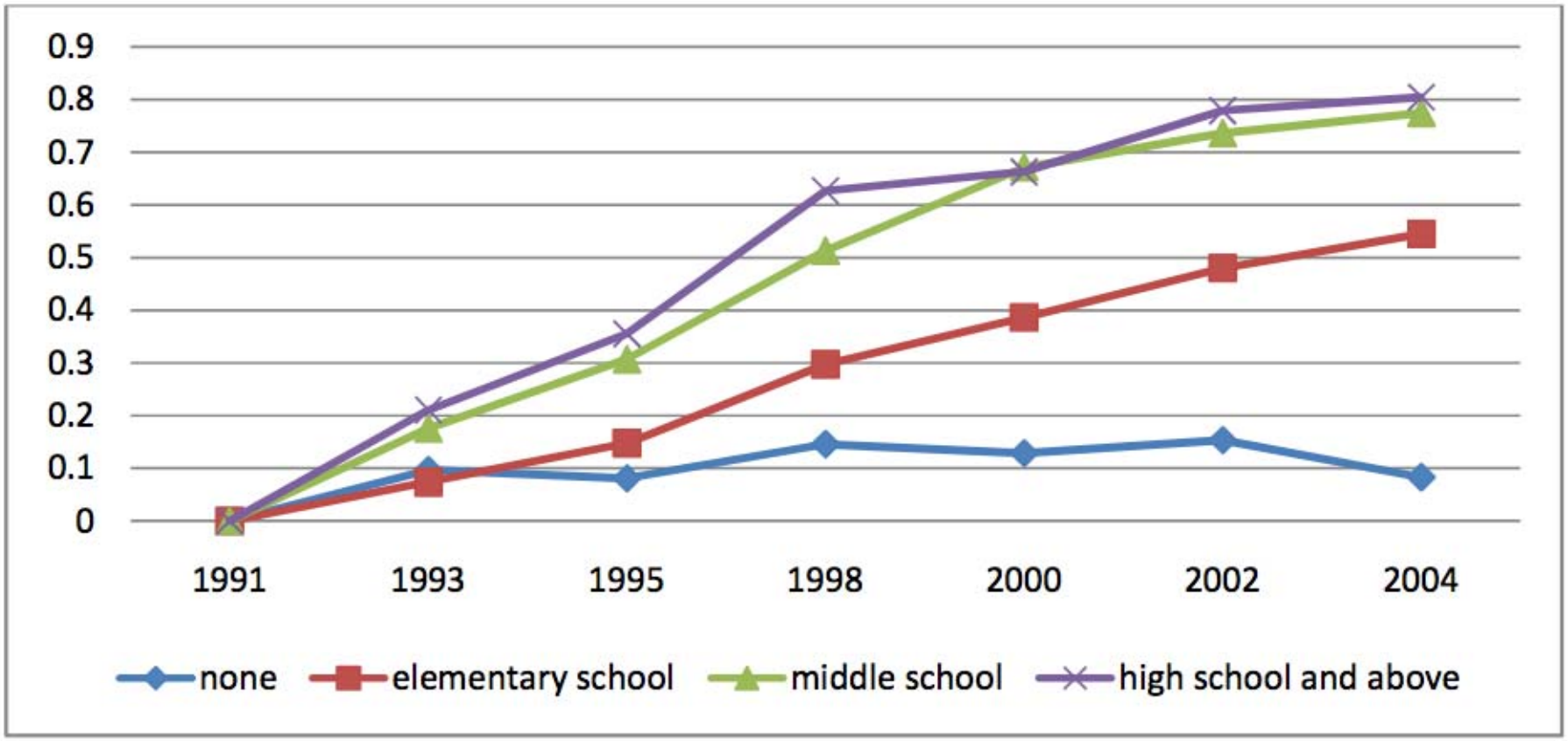
(June 1967)

ATM Technology Adoption
Cumulative by Age



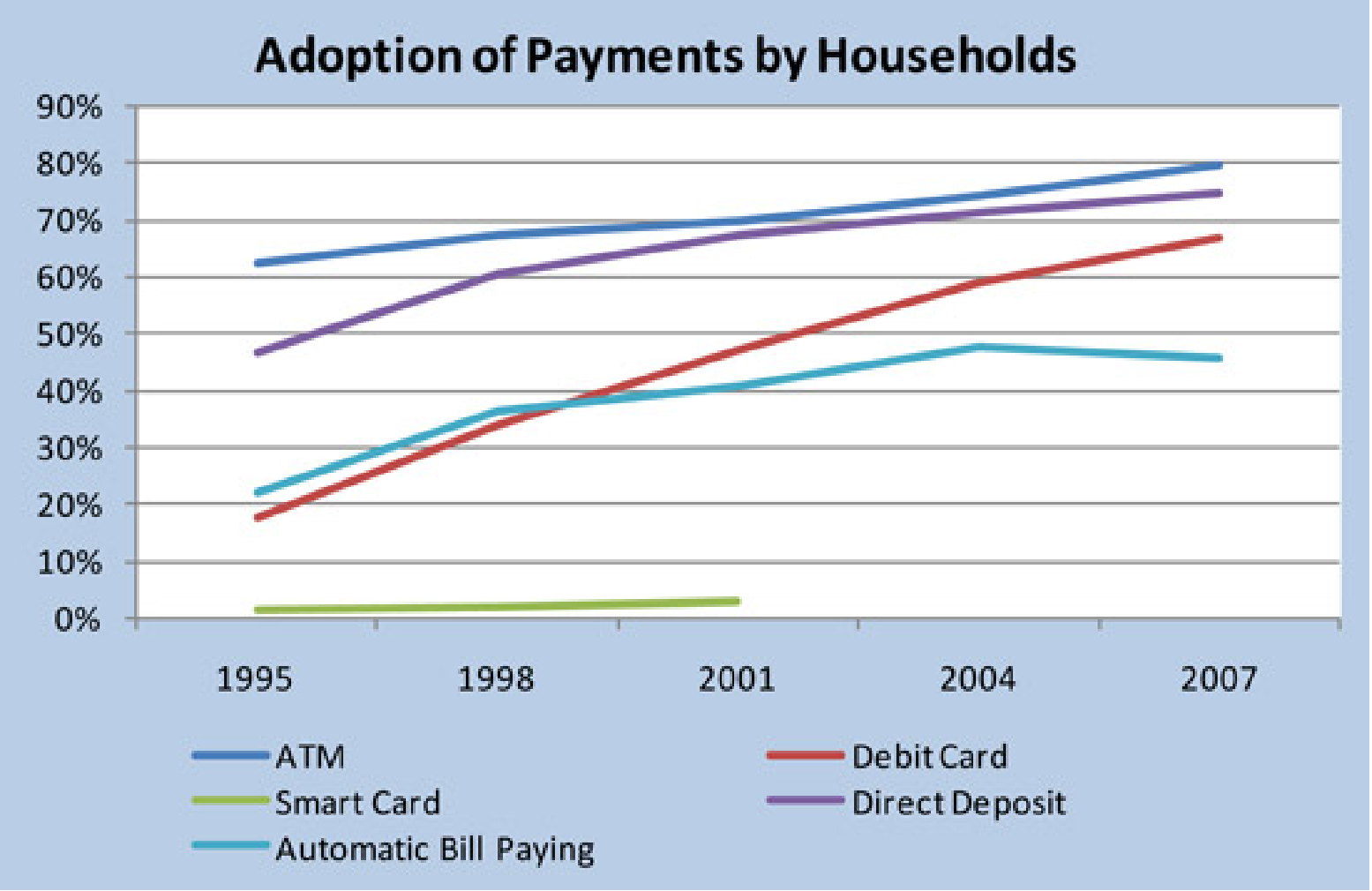
Source: Yang, Botao, "Dynamics of Consumer Adoption of Financial Innovations: The Case of ATM Cards," University of Toronto, September 25, 2008, p. 10.

ATM Technology Adoption
Cumulative by Education Level



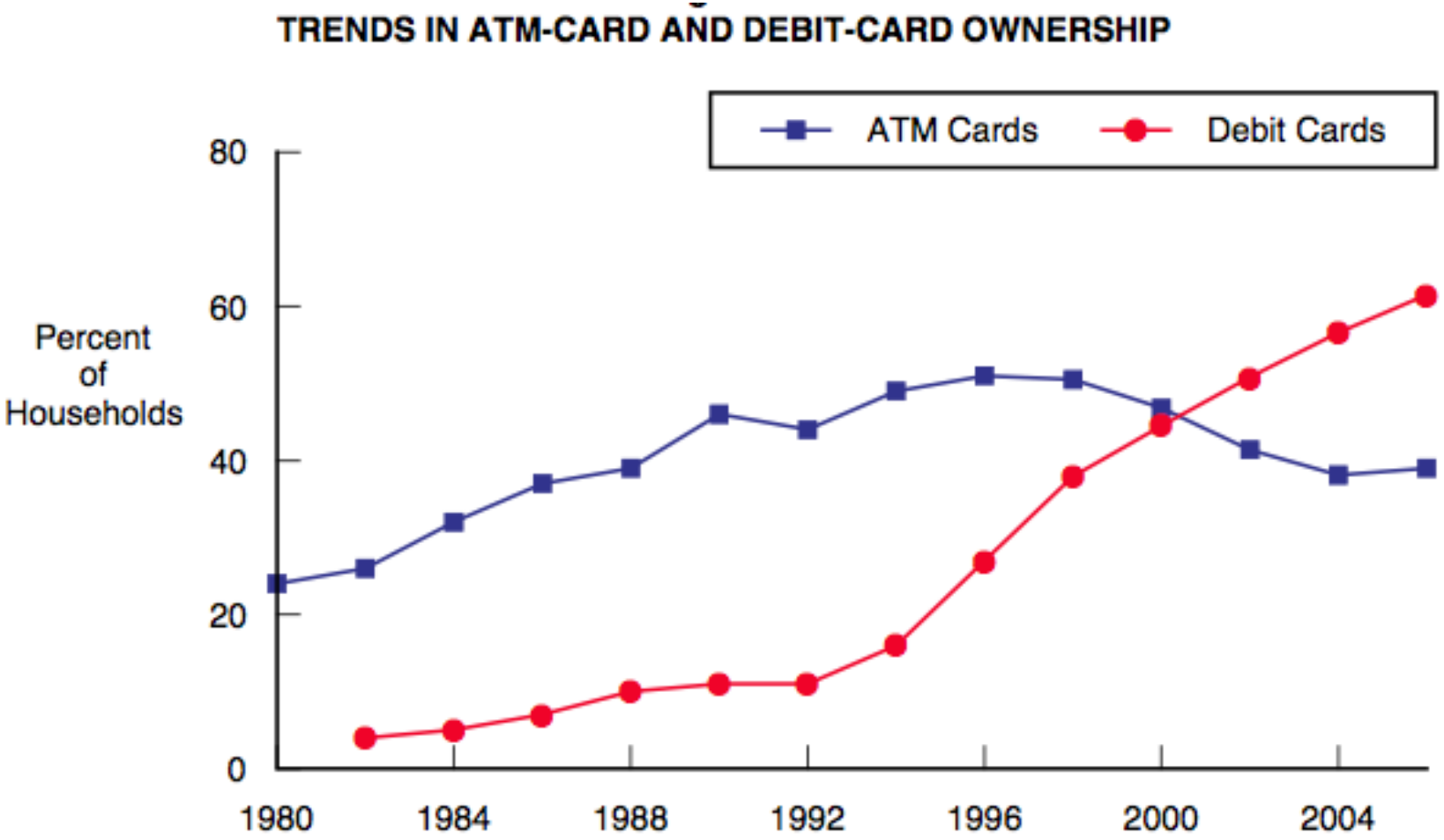
Source: Yang, Botao, "Dynamics of Consumer Adoption of Financial Innovations: The Case of ATM Cards," University of Toronto, September 25, 2008, p. 11.

ATM Technology Adoption – Beyond ATM



Source: Federal Reserve Bank of Philadelphia, "Adoption of Payments by Households," Consumer Payments Snapshot, July 14, 2010, http://www.philadelphiafed.org/payment-cards-center/tools-for-researchers/consumer-statistics/, accessed September 10, 2010.

ATM Technology Adoption

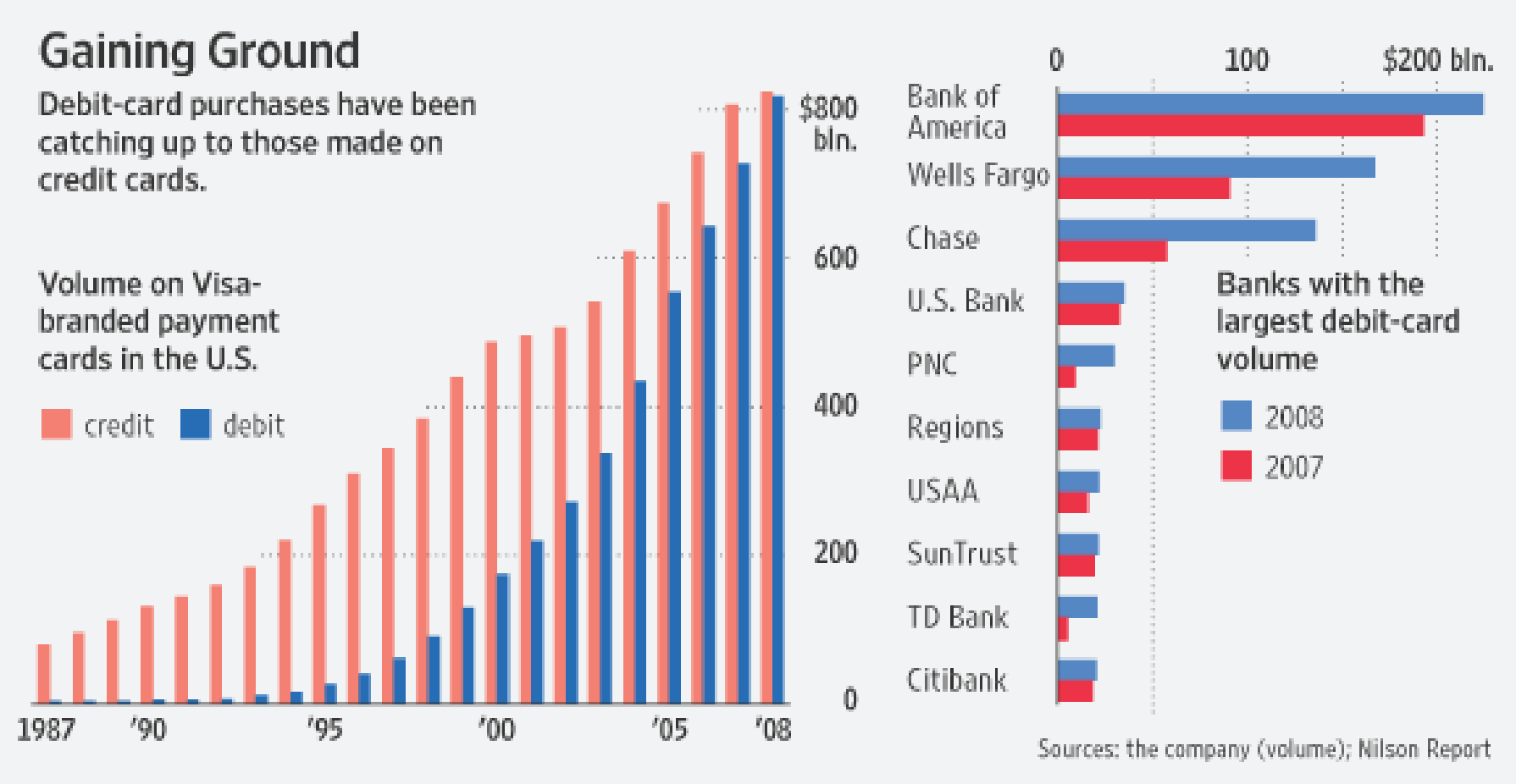


Base: All U.S. Households

Source: "MacroMonitor Market Trends," SRI Consulting Business Intelligence, June 2007, p. 4.

ATM Technology Adoption

Credit to Debit Card Transition



Source: Frank, John B., "Wanted: Consumers Using Signature," Payments Industry News Debit Blog, http://pindebit.blogspot.com/2009/09/wanted-consumers-using-signature.html, September 1, 2009, accessed September 10, 2010.

EHR VS. ATM
TECHNOLOGY ADOPTION

EHR vs. ATM Technology Adoption

Source: Pogue, David, “Charting a New Course - Electronic Medical Records Are Here, and They Come Not Without Challenges, Controversy or Expense,” CBS News Sunday Morning, http://www.cbsnews.com/stories/2009/09/13/sunday/main5306927.shtml , September 13, 2009, accessed September 10, 2010.

EHR vs. ATM Technology Adoption

Beyond EHR

Source: Markoff, John, "Smarter Than You Think – The Boss is Robotic, and Rolling Up Behind You," NYTimes.com, http://www.nytimes.com/2010/09/05/science/05robots.html, September 4, 2010, accessed September 10, 2010.

EHR vs. ATM Technology Adoption

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EHR vs. ATM Technology Adoption
Beyond EHR

Making Your Presence Robotic

A new generation of robots is making it possible to be, in effect, in two places at once. From anywhere with a computer and a Wi-Fi connection, the operator can use the robot to hear, talk, see and be seen and move around a workplace far away. Early adopters include doctors, technology workers and supervisors. The robots range in size, features and price. Here is a sampling.

	Vgo (made by Vgo Communications)	Tilr (RoboDynamics)	Texai (Willow Garage)	RP-7i (InTouch Health)	QB (Anybots)
HEIGHT	4'0"	3'8" or 4'2"	5'2"	5'5"	2'6" to 6'0"
TOP SPEED	3.75 m.p.h.	2.4 m.p.h.	1.5 m.p.h.	2 m.p.h.	3.5 m.p.h.
DISPLAY SIZE	7"	8" (touchscreen)	15"	15"	3.5"
FIELD OF VIEW	60 degrees	55 degrees	140 degrees	360 degrees	130 degrees
CONNECTION	400 kbps	500 kbps	500 kbps	600 kbps	500 kbps
PRICE	$4,995	$10,000	Not available	Not available	$15,000
UNIQUE FEATURES	Text-to-speech; camera auto-tilts based on drive speed; remote monitoring headlights and auto-docking to the charger.	Web-based controls; can use own video like Skype, Google Vid Chat, MSN, etc.	Technology agnostic (can pilot on Windows, Mac or Linux), secure connection between pilot and Texai (SSL and VPN tunnel).	FDA-cleared, connects directly to Class II medical devices including electronic stethoscopes, otoscopes and ultrasound.	Untippable, two-wheel drive design; stabilized video; Web-based controls.





Sources: the companies

THE NEW YORK TIMES

Source: Markoff, John, "Smarter Than You Think – The Boss is Robotic, and Rolling Up Behind You," NYTimes.com, http://www.nytimes.com/2010/09/05/science/05robots.html, September 4, 2010, accessed September 10, 2010.

FINAL THOUGHTS

Slower than you want

- yet –

faster than you expect!

Final Thoughts

- **EHR vs. ATM Technology Adoption Rates**
  - Consumer Acceptance Outlook = *Excellent*
  - Medical Co. Acceptance Outlook: = *Good*
  - Physician Acceptance Outlook: = *YMWV*

- **Major Inhibitors**
  - Reduced Physician / Patient Interaction Time
  - Perception / Reality of Physician Higher Overhead
  - Conversion Costs for Small Practices

- **Major Facilitators**
  - Higher Patient Data Accuracy & Consistency
  - Cross-organization (Hospital/Physician/Pharmacy)
  - Ultimate Potential for Reduced Costs
  - Faster Patient Data Availability in Time-Critical Situations

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