Information Avoidance and Celebrity Exposure: The Effect of "Magic" Johnson on AIDS Diagnoses in the U.S.

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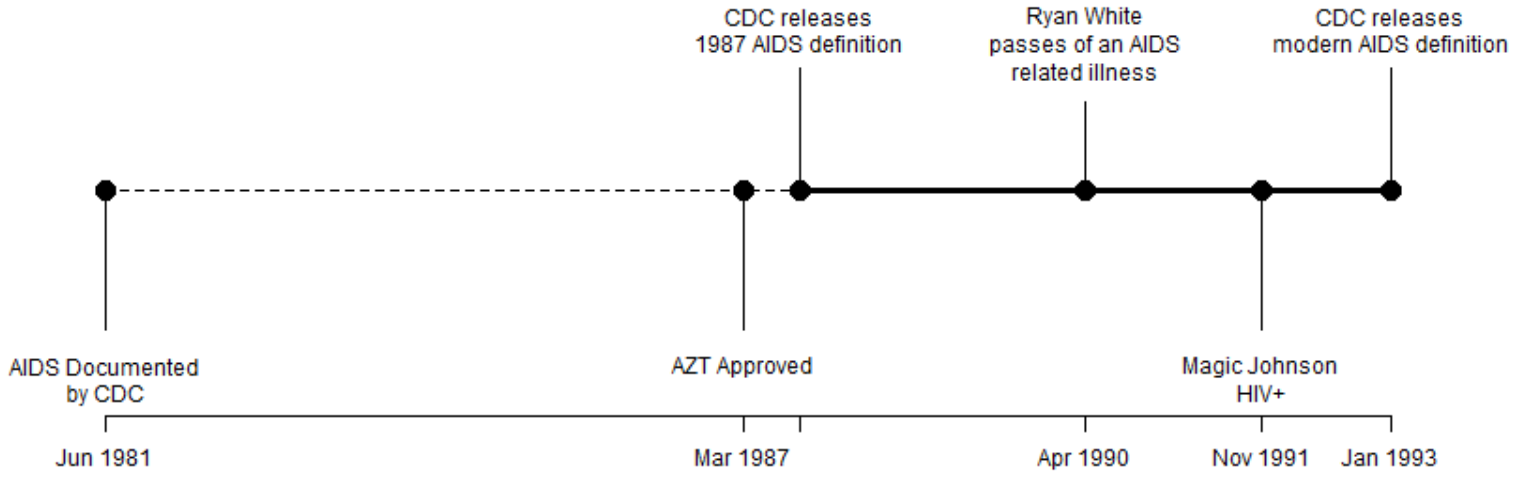
Timeline



Research Question: How did Magic Johnson's announcement change the AIDS landscape (knowledge, testing, and mortality)?

Hypotheses

Johnson's announcement will have the greatest impact on those who are:

1. less aware of their risk
2. more familiar with Johnson

Literature Review

- High costs (monetary, social, psychological) disincentivize testing (Kőszegi, 2003; Valdiserri, 2002; Stokes and Peterson, 1998).
- In the case of Huntington Disease, people often choose not to get tested and underestimate their chances of carrying the disease (Oster et al., 2013).
- People change their behavior after learning of another person's HIV status (Godlonton and Thornton, 2013).

Data Sources

1. National Health Interview Survey (NHIS) Go to NHIS
   - Individual Level Responses (Week)
2. CDC AIDS Public Use Data
   - Individual Level AIDS Diagnoses
   - Year-Month, MSA, Demographics, Diagnosis, Sexuality
3. Others:
   - NCHS Multiple Cause of Death Data
     - Individual Level AIDS Deaths (Month)
   - Yearly Homosexual Population Index (Walther and Poston Jr, 2004)
     - MSA-by-Sexuality Level

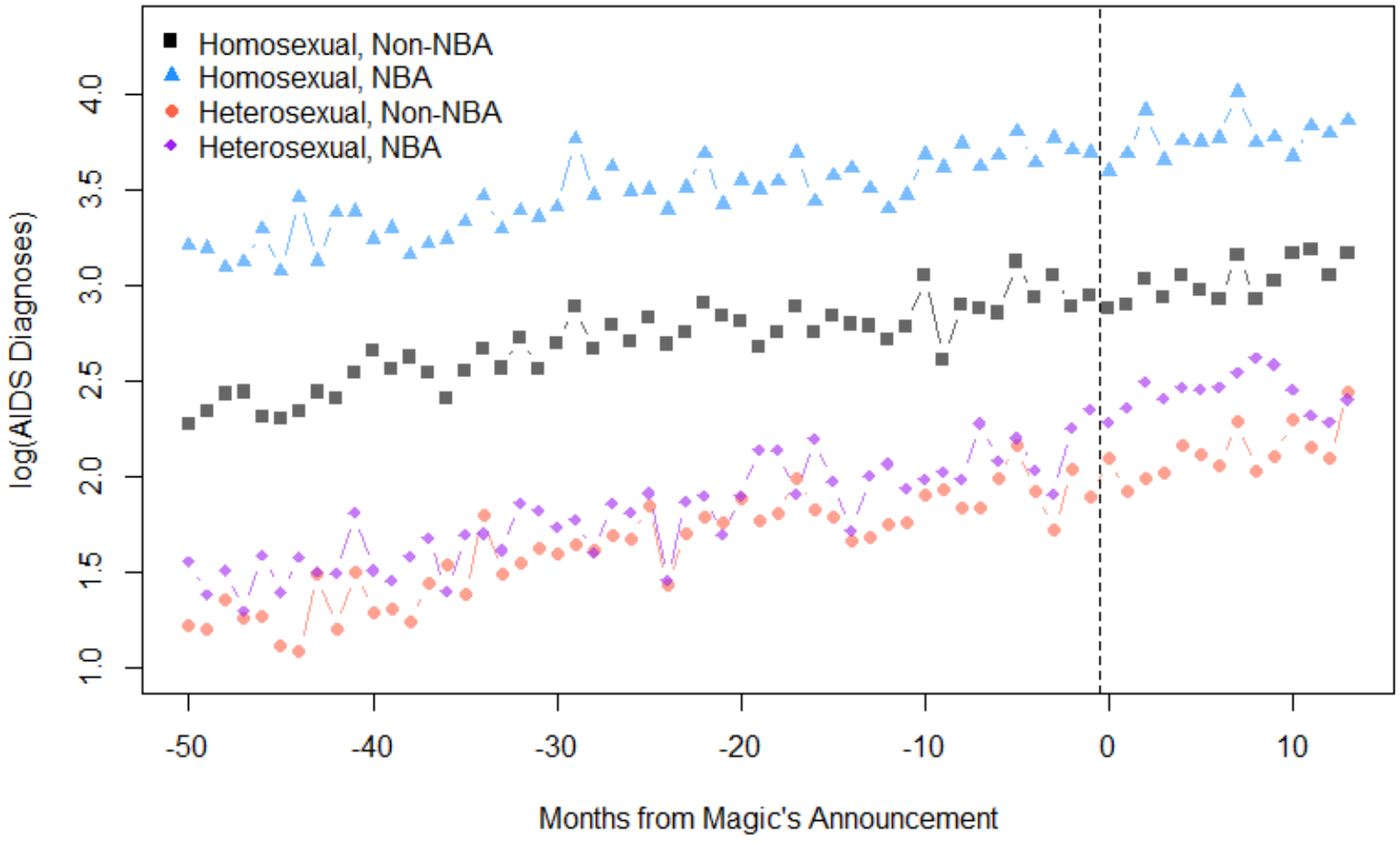
Methodology – Outcomes

$$\begin{aligned}\sinh^{-1}(D_{ct}) &= \alpha_c + \beta_c \text{Trend} + \delta_0(\text{Magic}_t) \\ &+ \delta_1(\text{Heterosexual}_c \text{ x } \text{Magic}_t) + \delta_2(\text{NBA}_c \text{ x } \text{Magic}_t) \\ &+ \delta_3(\text{NBA}_c \text{ x } \text{Heterosexual}_c \text{ x } \text{Magic}_t) + \phi X_{ct} + \epsilon_{ct}\end{aligned}$$

$$\begin{aligned}P(\cdot) &= \alpha_c + \beta_c \text{Trend} + \delta_0(\text{Magic}_t) \\ &+ \delta_1(\text{Heterosexual}_i \text{ x } \text{Magic}_t) + \delta_2(\text{NBA}_c \text{ x } \text{Magic}_t) \\ &+ \delta_3(\text{NBA}_c \text{ x } \text{Heterosexual}_i \text{ x } \text{Magic}_t) + \phi X_{ict} + \epsilon_{ict}\end{aligned}$$

- P(Diagnosis Category)
  - Pre-1985
  - 1987–Presumptive
  - 1987–Definitive
- P(Alive in 2001)

Time Series - Diagnoses



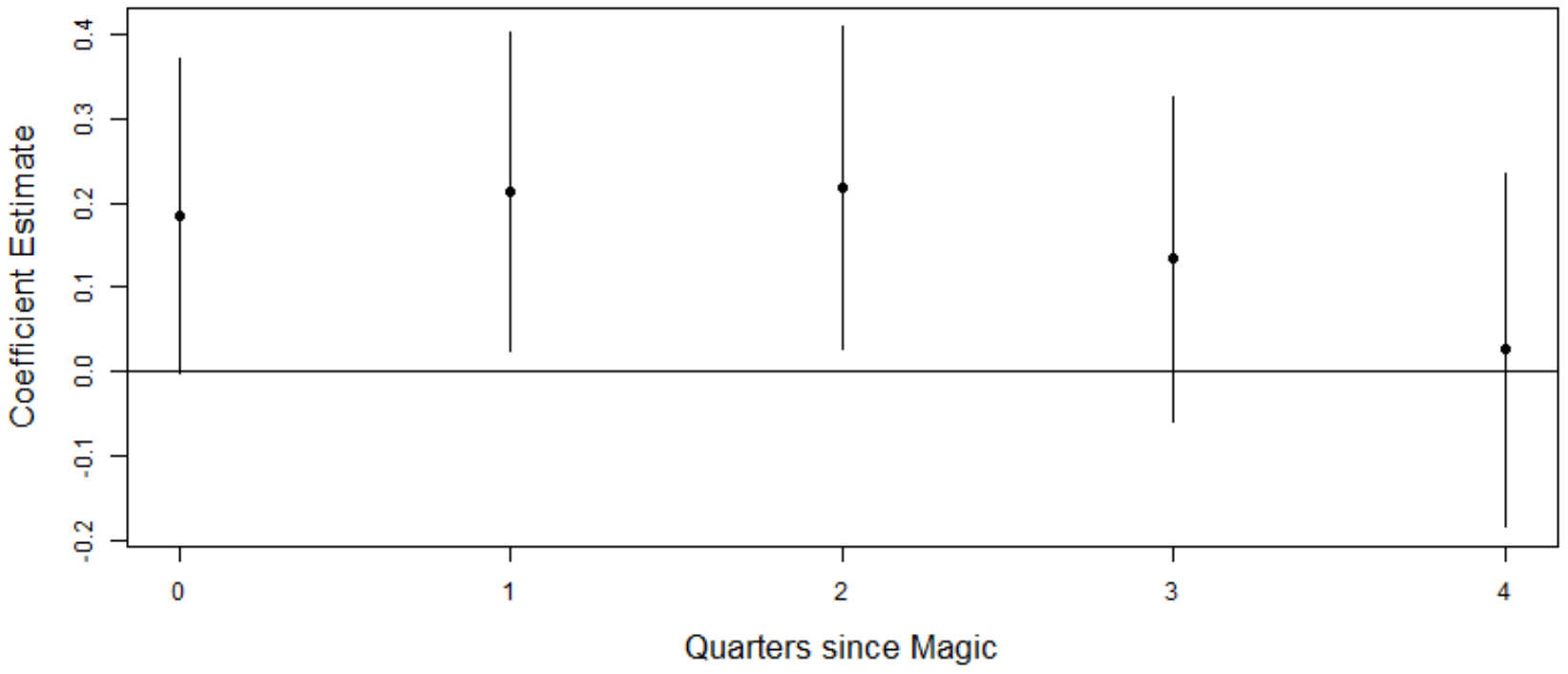
Results – Diagnoses

	$\sinh^{-1}$(Diagnoses)			
Magic	-0.040	-0.026	-0.051	-0.042
	(0.030)	(0.028)	(0.047)	(0.049)
Magic x Heterosexual	0.102**		0.077	0.081
	(0.043)		(0.063)	(0.066)
Magic x NBA		0.091**	0.003	-0.010
		(0.045)	(0.059)	(0.061)
Magic x Heterosexual x NBA			0.198**	0.199**
			(0.082)	(0.084)
Num.Obs.	7,552	7,552	7,552	7,296
MSA-by-Sexuality Trend	Yes	Yes	Yes	Yes
CARE	No	No	Yes	Yes
Population	No	No	No	Yes
AIDS Deaths$_{t+24}$	No	No	No	Yes
R2	0.853	0.853	0.853	0.855

* p < 0.1, ** p < 0.05, *** p < 0.01

Note: These OLS regressions estimate the effect of Magic Johnson's announcement on the rate of AIDS diagnoses in select MSAs. Each regression contains fixed effects for MSA-by-Sexuality and month of diagnosis. In addition, specific MSA-by-Sexuality trends are also controlled for. Standard errors are clustered at the MSA-by-Sexuality level. Results are qualitatively similar when raw diagnosis counts are used (OLS & Poisson) instead of the inverse hyperbolic sine transformation.

Results – Diagnoses



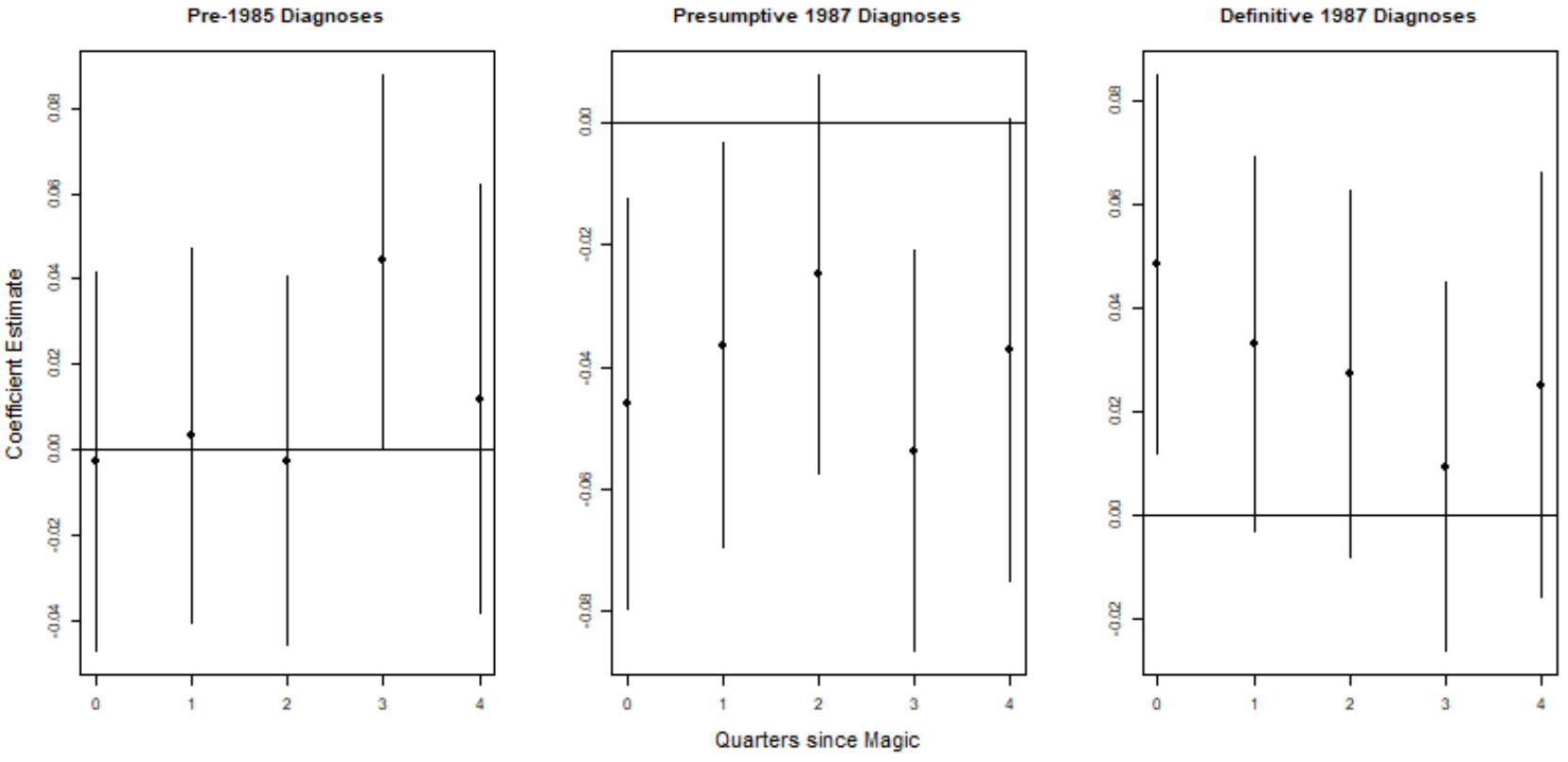
Results – Composition

	P(Pre-1985)	P(1987-P)	P(1987-D)
Magic x Heterosexual	-0.002	0.009	-0.008
	(0.020)	(0.015)	(0.013)
Magic x NBA	0.013	-0.001	-0.012
	(0.015)	(0.012)	(0.010)
Magic x NBA x Heterosexual	0.011	-0.040**	0.029
	(0.025)	(0.017)	(0.021)
Num.Obs.	82,424	82,424	82,424
R2	0.104	0.079	0.047

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Note: These LPM regressions estimate the impact of Magic Johnson's announcement on types of diagnoses. Each regression contains fixed effects for MSA-by-Sexuality, race, age, month of diagnosis, month of report, and transmission category. Standard errors are clustered at the MSA-by-Sexuality level.

Results – Composition



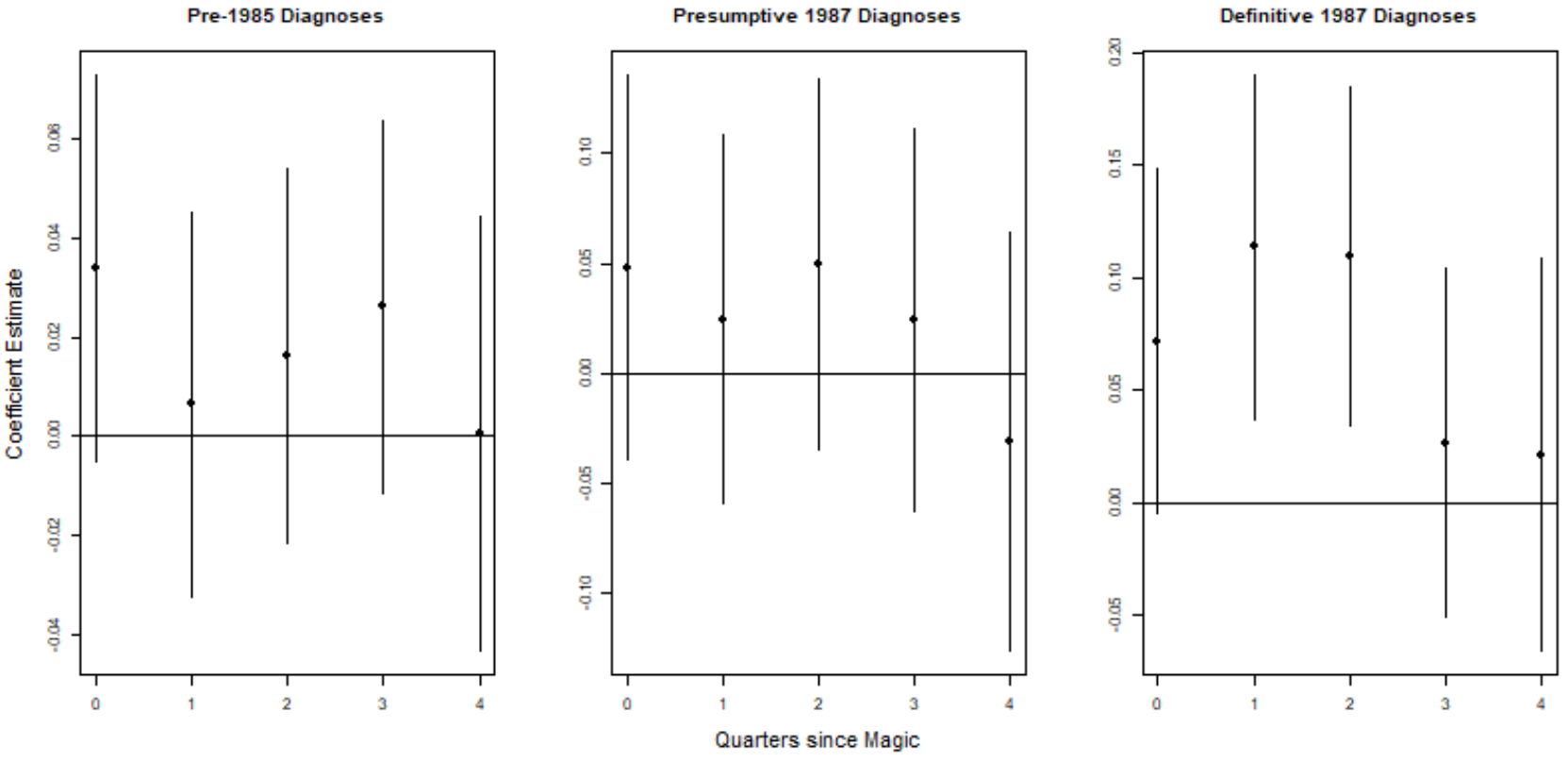
Results – Mortality

	P(Alive in 2000)			
Magic x Heterosexual	-0.032***	-0.023**	-0.049*	-0.049*
	(0.012)	(0.010)	(0.026)	(0.026)
Magic x NBA	-0.005	-0.005	0.021	-0.020
	(0.009)	(0.007)	(0.023)	(0.015)
Magic x NBA x Heterosexual	0.034**	0.018	0.027	0.073***
	(0.015)	(0.013)	(0.032)	(0.026)
Num.Obs.	82,424	59,802	10,424	12,198
Surveillance Definitions	All	Pre-1985	1987-P	1987-D
NA	NA	NA	NA	NA
R2	0.087	0.096	0.104	0.116

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Note: These regressions estimate the effect of Magic Johnson's announcement on mortality. Each regression contains fixed effects for MSA-by-Sexuality, race, age, month of diagnosis, month of report, and transmission category.Standard errors are clustered at the MSA-by-Sexuality level.

Results – Mortality



Discussion

What happened after Magic Johnson's announcement?

1. Increase in HIV/AIDS awareness
2. (Temporary) Increase in Diagnoses
   - + diagnoses $\longrightarrow$ earlier testing $\longrightarrow$ + outcomes
   - Δ heterosexual men $>$ Δ homosexual men
   - Δ is concentrated in NBA MSAs

Back of the Envelope

- HIV testing in Denver increased by 200% in the 20 days following Johnson's announcement (Cohn et al., 1992).
- Denver saw a 30% increase in diagnoses over the following 13 months.
- The average NBA MSA saw a 20% increase in diagnoses.
- HIV testing increased by $\approx 130\%$.

Conclusion

"Magic Johnson is an idol," [Dr. Michael] Gottlieb said in an interview with KNBC-TV in Los Angeles. "No one coming down with AIDS except perhaps George Bush would have more impact on this epidemic."

- New York Times, 1991

NHIS - Heard about AIDS via Media?

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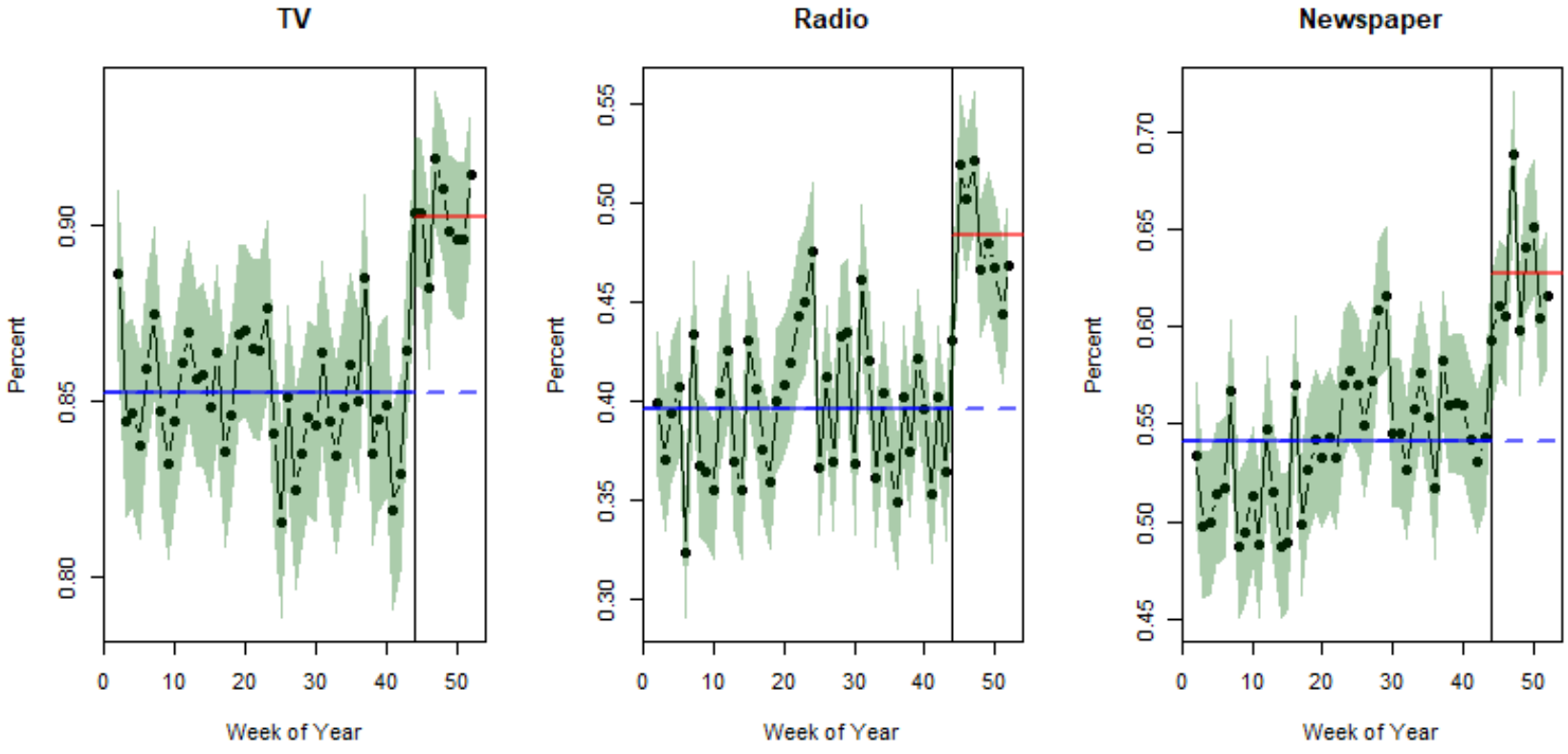
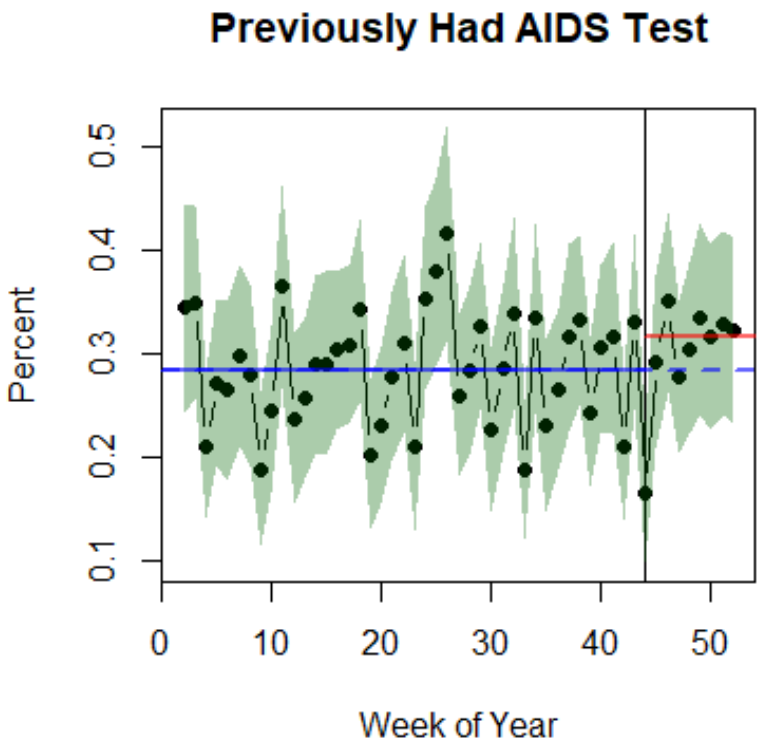
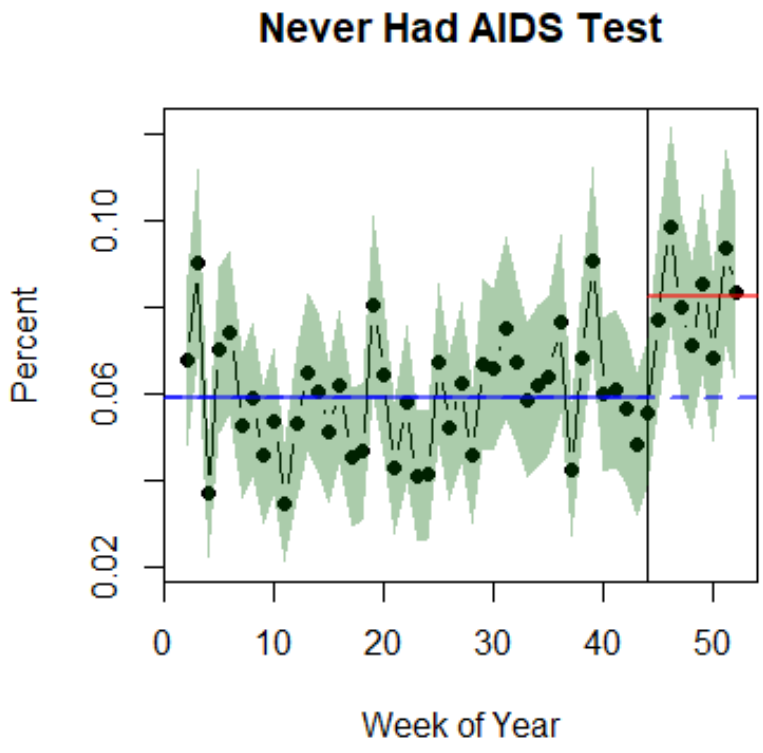


NHIS - Expect to get an AIDS test?

Back to Data





10% (3 pp, p $\approx$ .02) increase vs 40% (3 pp, p $<$ .001) increase

NHIS - Other Survey Questions

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Table 1: Questions Relevant to AIDS Knowledge

Survey Question	Pre-Magic	Post-Magic	p-value
Have AIDS, Feel Healthy	0.909	0.932	$<.001$
Have Virus, Not AIDS	0.922	0.952	$<.001$
Heard of AZT	0.519	0.577	$<.001$
No Test b/c No Risk	0.913	0.897	$<.001$

CARE - NBA Breakdown

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	non-CARE	CARE
non-NBA	26	9
NBA	13	11

Included MSAs

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Chicago, Washington, Houston, Miami, Philadelphia, Atlanta, San Juan, Boston, Dallas, Newark, San Diego, Fort Lauderdale, Baltimore, Oakland, Seattle, Tampa-Saint Petersburg, Riverside-S Berndino, Orange County, New Orleans, Detroit, Denver, Jersey City, Saint Louis, Nassau-Suffolk, New Haven, Kansas City, Phoenix, West Palm Beach, Portland, Orlando, Austin, Bergen-Passaic, San Antonio, Sacramento, Jacksonville, Minneapolis-St Paul, Fort Worth, Hartford, Indianapolis, Las Vegas, Columbus, Middlesex, Norfolk, Cleveland, Pittsburgh, Monmouth-Ocean City, Cincinnati, Nashville, Richmond, Raleigh-Durham, Memphis, Milwaukee, Charlotte, Salt Lake City, Buffalo, Greensboro, Oklahoma City, Providence, Rochester