

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

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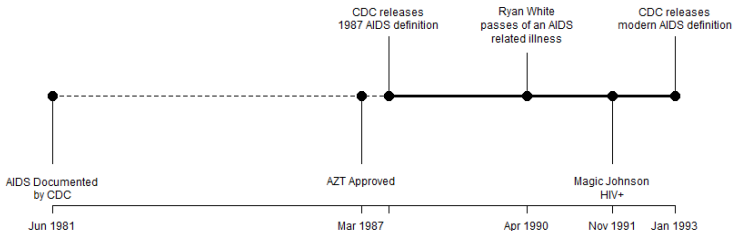
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# Literature Review

- 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).
- Following Johnson's announcement, there was a large shift in support for HIV/AIDS R&D amongst heterosexuals while there was no change for homosexuals (Pollock III, 1994).

# Timeline



**Research Question:** Given the extreme stigmatization and misunderstanding of AIDS at the time, how did Magic Johnson's announcement change the AIDS landscape?

# Data Sources

- ① National Health Interview Survey (NHIS)
  - Individual Level Responses (Week)
- ② CDC AIDS Public Use Data
  - Individual Level AIDS Diagnoses (Month)
- ③ NCHS Multiple Cause of Death Data
  - Individual Level AIDS Deaths (Month)
- ④ Yearly Homosexual Population Index (Walther and Poston Jr, 2004)
  - MSA-by-Sexuality Level

[Go to NHIS](#)

# Summary Statistics

Included MSAs

Care vs NBA

## Unit of Analysis: Monthly MSA-by-Sexuality (Community)

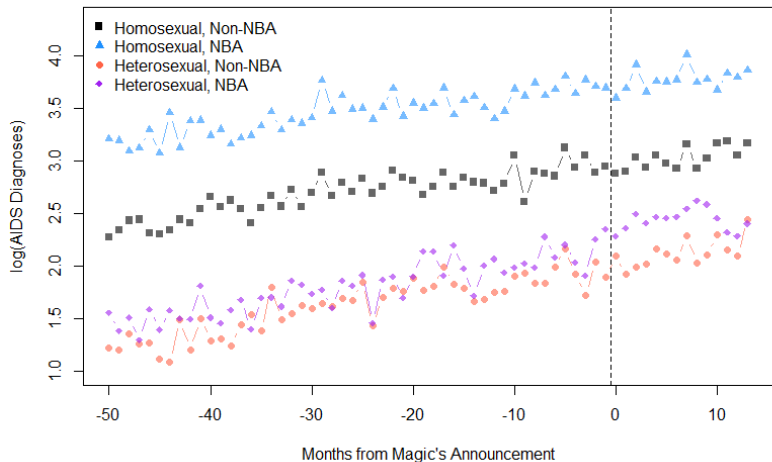
### Differences in knowledge/understanding

Statistic	N	Mean	St. Dev.	Min	Max
Homosexual Diagnoses	3,776	17.087	17.099	0	107
Heterosexual Diagnoses	3,776	5.865	7.871	0	52
Population (in 100k)	7,296	9.069	5.848	2.681	37.112
Homosexual Index (per 100k)	7,296	117.407	101.553	37.4	773
AIDS Deaths	7,552	23.109	20.524	0	128
OD Deaths	7,552	1.919	3.024	0	30
Magic	7,552	0.219	0.413	0	1
NBA	7,552	0.407	0.491	0	1
CARE	7,552	0.339	0.473	0	1

**Note:** This table contains summary statistics for the analysis sample for diagnoses. Due to the stark differences in the distributions for diagnoses in homosexual and heterosexual populations, diagnoses are broken down by sexuality.

Sample from March 1987 - December 1992 in order to account for AZT and HAART and definitional changes in what constitutes AIDS.

# Time Series - Diagnoses



# Methodology – Outcomes

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

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

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

# Results – Diagnoses

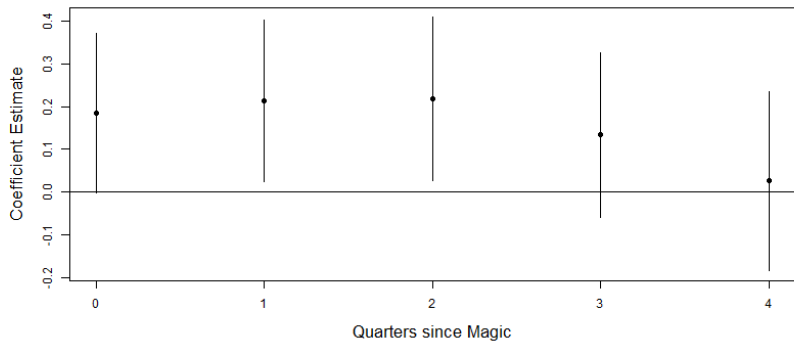
	$\sinh^{-1}(\text{Diagnoses})$			
Magic	-0.040 (0.030)	-0.026 (0.028)	-0.051 (0.047)	-0.042 (0.049)
Magic x Heterosexual	0.102** (0.043)		0.077 (0.063)	0.081 (0.066)
Magic x NBA		0.091** (0.045)	0.003 (0.059)	-0.010 (0.061)
Magic x Heterosexual x NBA			0.198** (0.082)	0.199** (0.084)
Num.Obs.	7,552	7,552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



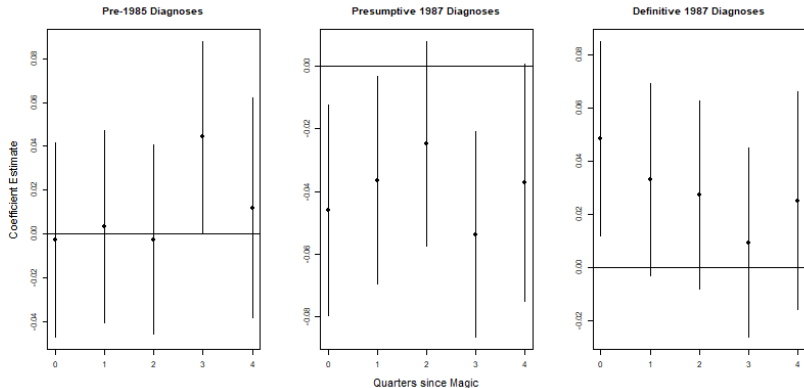
# Results – Composition

	P(Pre-1985)	P(1987-P)	P(1987-D)
Magic x Heterosexual	-0.002 (0.020)	0.009 (0.015)	-0.008 (0.013)
Magic x NBA	0.013 (0.015)	-0.001 (0.012)	-0.012 (0.010)
Magic x NBA x Heterosexual	0.011 (0.025)	-0.040** (0.017)	0.029 (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



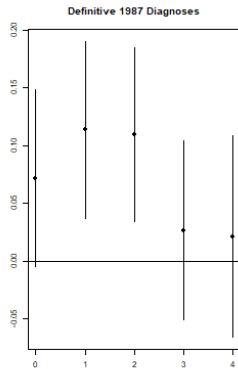
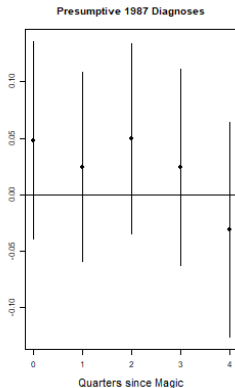
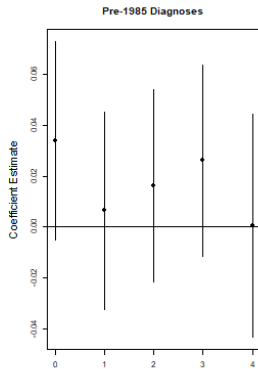
# Results – Mortality

	P(Alive in 2000)			
Magic x Heterosexual	-0.032*** (0.012)	-0.023** (0.010)	-0.049* (0.026)	-0.049* (0.026)
Magic x NBA	-0.005 (0.009)	-0.005 (0.007)	0.021 (0.023)	-0.020 (0.015)
Magic x NBA x Heterosexual	0.034** (0.015)	0.018 (0.013)	0.027 (0.032)	0.073*** (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  $\implies$  earlier testing  $\implies$  + outcomes
  - $\Delta$  heterosexual men  $>$   $\Delta$  homosexual men
  - $\Delta$  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  $\approx 130\%$ .

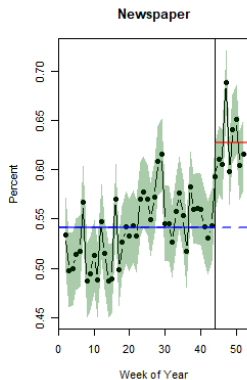
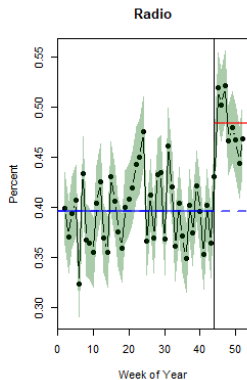
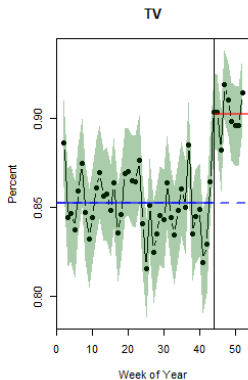
# Conclusion

*“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.”*

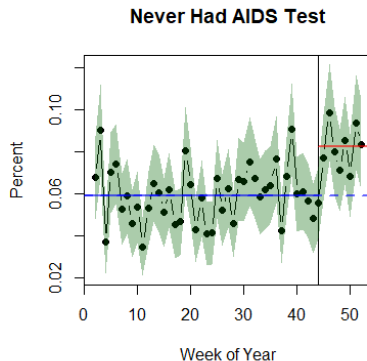
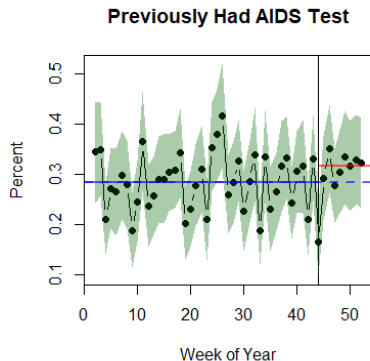
*- New York Times, 1991*



# 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