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Shot or Not? How Insurance Shaped Flu Vaccination Among Adults in California

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Background

- Influenza (Flu) is a respiratory infection caused by influenza viruses. Vaccination is the most effective method of prevention.[1]
- From 2016 to 2024, U.S. flu-related cases remain high among **adults (18+)**
  - **2016:** 29 million infections, 38,000 deaths[2]
  - **2024:** 40 million infections, and 28,000 deaths[3]
- 2016 health insurance coverage in California:
  - **Any private insurance plan:** 67.5%
  - **Any government/public plan**: 37.3%
- Current research examines the effects of insurance coverage on vaccination rates, but further research is needed on the difference between private and public plans[4]

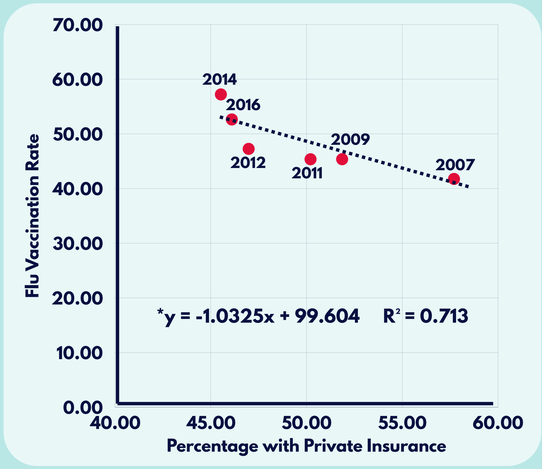
Objective

To analyze the relationship between the type of health insurance and flu vaccination status among adults in California (CA)

Methods

- Data source: **California Health Interview Survey (CHIS)**, largest state health survey in the U.S., conducted by UCLA's Center for Health Policy Research
- CHIS is a **randomized survey**, sampling > 20,000 households in CA, collecting data on over **500 health/healthcare-related variables** per year[5]
- Analysis of **2007-2016** CHIS data, comparing flu vaccine receipt among **private** versus **public** health insurance (variables listed below):
  - Received flu vaccine in the past 12 months – **FluVaxx**
  - Employer-based insurance – **InsEM**
  - Private, non-employer-based insurance – **PRVnonEM**
  - Private insurance through Covered CA – **PrvCVRDCA**
  - Medicare – **InsMC**
  - Medicaid – **InsMCD**
  - Indian health insurance (IHS) – **InsIHS**
  - Other government insurance – **InsOGOV**
- Logistic Regression analysis via **SPSS v.29**

Figure 1. Trend in Percentage of Adults with Private Insurance versus Flu Vaccination Rate, 2007-2016



*Private insurance coverage and flu vaccination rates among adults showed a negative correlation from 2007 to 2016, private insurance rates fell as vaccination rates rose.

Table 1. Association Between Private Insurance Plans and Flu Vaccination Rates: Logistic Regression Analysis

Plan Type	Odds Ratio	Confidence Interval	p-value
InsEM	0.974	0.95	0.360
PRVnonEM	1.031	0.95	0.677
PrvCVRDCA	0.959	0.95	0.640

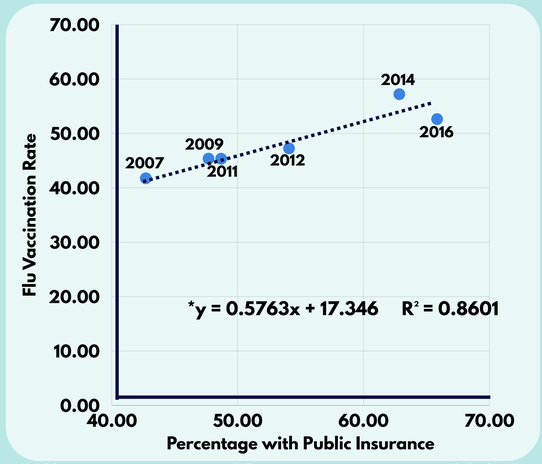
*Logistic Regression analysis showed no significant association between private insurance plans and flu vaccination rates. All private insurance plans above, have a p-value of greater than 0.05.

Results

Table 3. Survey Demographics of 2016 Respondents (N=21,055)

Race	**N (%)**
White	13,649 (64.83)
Black/African American	1,124 (5.34)
Asian	2,877 (13.66)
American Indian/Alaska Native	477 (2.27)
Other Single Race	2,340 (11.11)
More Than One Race	588 (2.79)
Ethnicity	
Hispanic	5,326 (25.30)
Self-Reported Age	
18-29	2,802 (13.31)
30-39	2,145 (10.18)
40-49	2,442 (11.60)
50-59	3,688 (17.52)
60-69	4,649 (22.08)
70-79	3,258 (15.48)
80+	2,071 (9.83)
Average Household Income	
Less Than $20,000	4,351 (20.66)
$20,000-39,999	4,300 (20.42)
$40,000-59,999	2,846 (13.52)
$60,000-79,999	2,497 (11.86)
$80,000-99,999	1,618 (7.68)
$100,000-119,999	1,483 (7.04)
More Than $120,000	3,960 (18.79)

Figure 3. Trend in Percentage of Adults with Public Insurance versus Flu Vaccination Rate, 2007-2016



*Public insurance coverage and flu vaccination rates among adults both increased from 2007 to 2016, showing a positive correlation.

Table 2. Association Between Public Insurance Plans and Flu Vaccination Rates: Logistic Regression Analysis

Plan Type	Odds Ratio	Confidence Interval	p-value
InsMCD	0.714	0.95	<0.001
InsMC	1.227	0.95	<0.001
InsIHS	1.096	0.95	0.644
InsOGOV	1.114	0.95	0.581

*Logistic regression shows a significant association between flu vaccination rates and public insurance plans Medicaid and Medicare ($p < 0.05$), while the two other public plans were not significant ($p > 0.05$).

Conclusions

- California adults with **Medicare and Medicaid were more likely to receive the flu vaccine** than those covered by **private** insurance plans
  - **contrary to a 2015 CDC study finding[4]** that found privately insured were more likely to be vaccinated
- Adults covered by Indian Health Services were **less likely** to receive the flu vaccine than others covered by public programs, limitation of small sample (n=103)
- Reintroduce the influenza vaccine question on future CHIS surveys for further investigation

Policy Implications

- California can offer **tax incentives** to employers that promote and provide free flu vaccinations through **employer-based insurance plans**
- State-wide implementation of community-based **vaccination initiatives and campaigns** to educate and vaccinate individuals with **private insurance**
- Create **vaccination requirements** in high-density public areas such as sports arenas, amusement parks, and festivals to increase vaccine receipt

References