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Implementation and evaluation of the "Unplugged" prevention program in Nigeria

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Response to Drugs and Related Organized Crime in Nigeria

This project is funded by the European Union

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- In 2015, the European Union funded a large scale project (project FED/2012/306-744) to promote **healthy lifestyles in schools, families and communities** in **Nigeria**.

- **Unplugged** was chosen as prevention intervention for the school setting (the plan included **adaptation-implementation-evaluation**).

- Involved institutions:
  - **Nigeria Office of UNODC**
  - **Federal Ministry of Education**
  - **National Drug Law Enforcement Agency**
  - **National Agency for Food and Drug Administration**

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The UNPLUGGED program

- Universal school-based program
  for preventing tobacco, alcohol and drugs use among adolescents
- Based on *social influence and skill-based* approach
- It includes the following components
  - Social skills
  - Personal skills
  - Knowledge
  - Normative education
- It is administered by teachers trained in a 3-days course
- It is made by 12 units, 1 hour each
- It is designed for 12-14 years old students
- It was tested through a randomized controlled trial (EU-Dap) in 7 European countries in 2004-2007 and showed to be effective

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Evaluation of effectiveness

- To evaluate the effectiveness of Unplugged in reducing use of substances and improving risk perceptions and skills, a **Randomized Controlled Trial** was organized
- Assuming alpha 0.05 (two-sided), power 0.80, prevalence of alcohol use in the control arm 14.6% and in the intervention arm 10.2%, 45 pupils per class, ICC 0.025, the estimated sample size needed was 1943 pupils per group. Setting as 3 the classes to be invited in each school, this corresponded to 14 schools in the intervention and 14 schools in the control arm. To overcome possible drop-outs, the number of schools was enlarged to 16 in the intervention and 16 in the control arm.
  - Intervention: **Unplugged** (16 schools)
  - Control: **usual school curriculum = no intervention** (16 schools)

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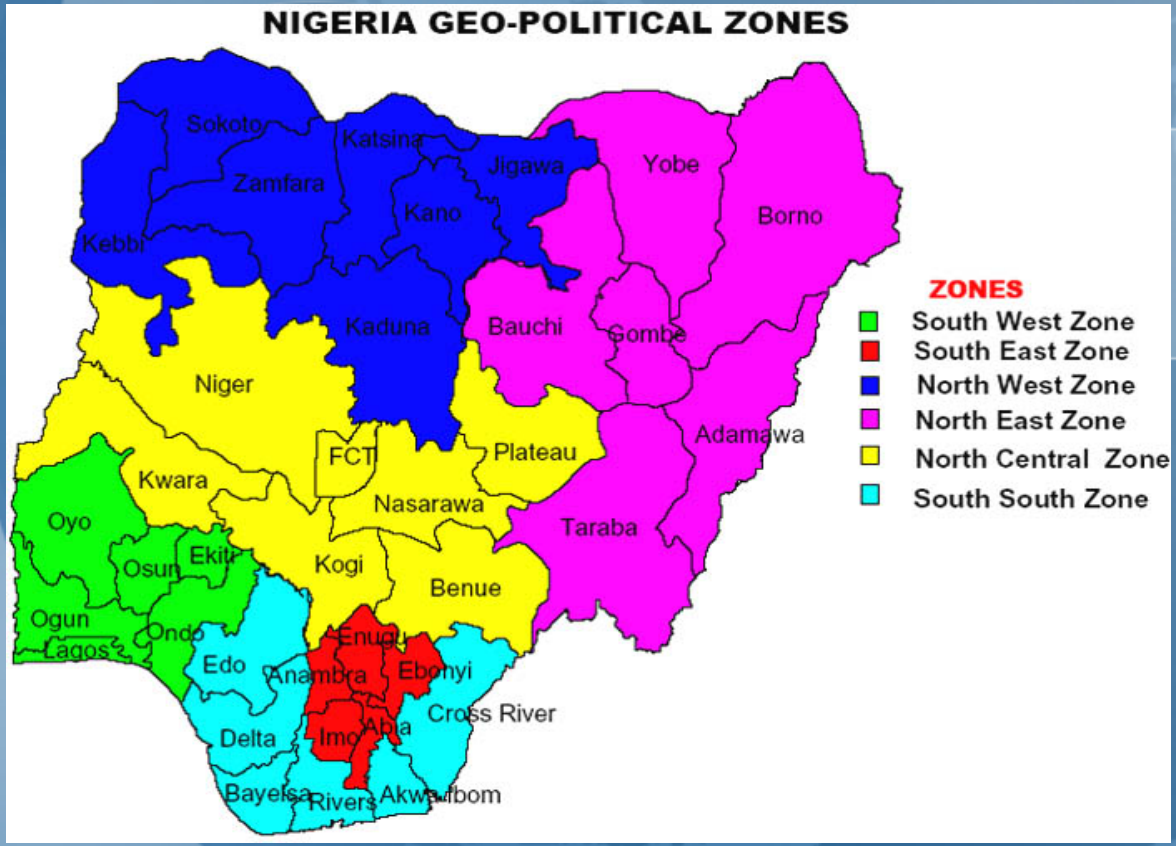
The **Federal Ministry of Education** provided **a list of 65 federal schools** based in the 6 Zones of the country, available to participate in the study. The evaluation involved the entire territory of Nigeria



32 schools were randomized to intervention or control group:

- **4 in North Central**
- **(2 in Abuja Federal Territory)**
- **4 in North East**
- **6 in North West**
- **4 in South East**
- **4 in South South**
- **8 in South West**

The randomization occurred within each zone.

BASELINE (PRE-TEST SURVEY)

- November/December 2015
- 32 schools, 96 classes participated
- 4078 baseline questionnaires were collected:
  - In the control arm: 2288 out of 2160 expected (106%)
  - In the intervention arm: 1790 out of 2160 expected (83%)

(17% drop-out in the intervention arm)

*expected sample according to rough calculations based on 45 pupils/class

FOLLOW-UP (POST-TEST SURVEY)

- May/June 2016
- 32 schools, 96 classes participated
- 4053 follow-up questionnaires were collected:
  - In the control arm: 2414 (out of 2288 collected at baseline)
  - In the intervention arm: 1639 (out of 1790 collected at baseline)

Analysis of the program effects

Baseline and follow-up questionnaires were matched through the anonymous code.

the matched sample included 3342 pupils

(679 follow-up questionnaires not matching with baseline)

The effect of the program was studied on the:

- **4053 follow-up pupils (intervention vs control)**
- **3342 matched pupils (taking into account baseline use)**

The results on the effect were quite similar for both study samples.

The analysis of the matched sample is more reliable and rigorous, and thus shown in the next slides.

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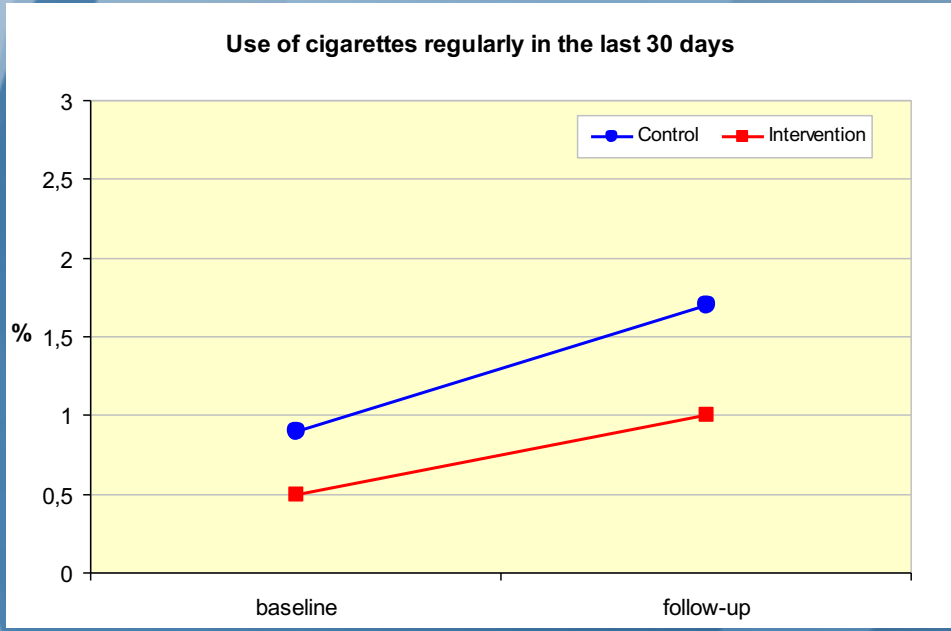
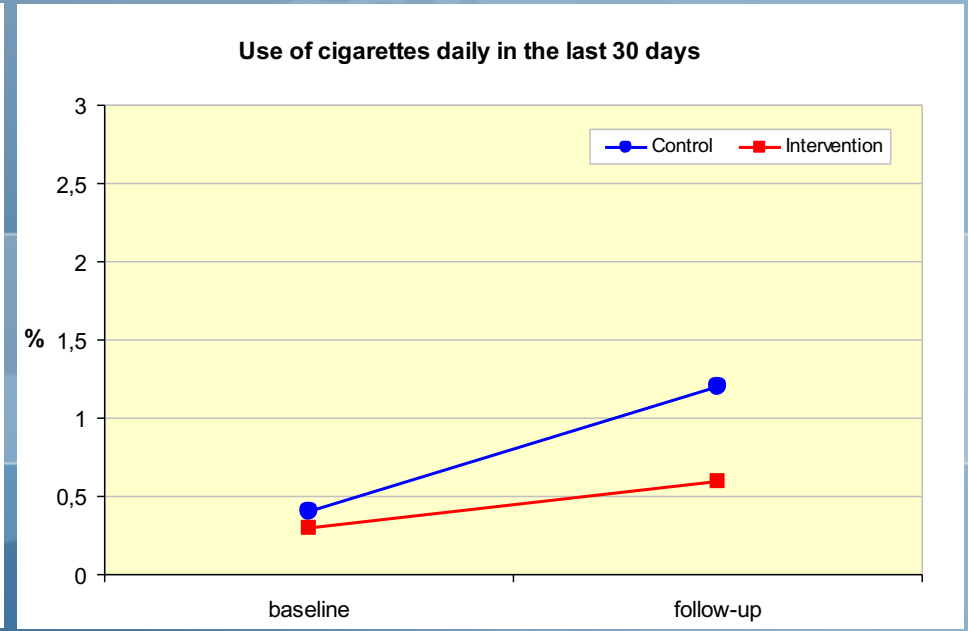
Prevalence of substance use at baseline

	Intervention (n=1384)	Control (n=1958)	Total (n=3342)
Cigarette smoking			
Lifetime	3.9%	4.5%	4.3%
Last 30 days	1.3%	2.0%	1.7%
>6 times (regular)	0.5%	0.9%	0.7%
>20 times (daily)	0.3%	0.4%	0.4%
Alcohol drinking			
Lifetime	34.4%	32.1%	33.1%
Last 30 days	14.4%	10.1%	11.9%
>6 times (regular)	5.9%	4.8%	5.3%
>20 times (daily)	2.0%	1.6%	1.8%
Cannabis use			
Lifetime	5.5%	5.6%	5.5%
Last 30 days	1.8%	1.6%	1.7%
>6 times (regular)	0.9%	1.1%	1.0%

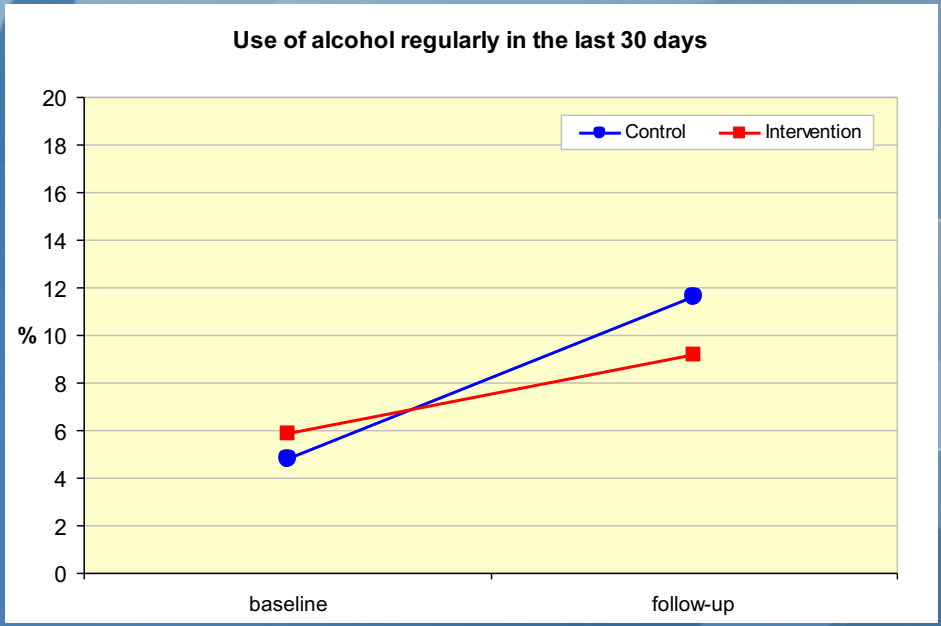
Cigarettes smoking (to be noted the very low prevalence)

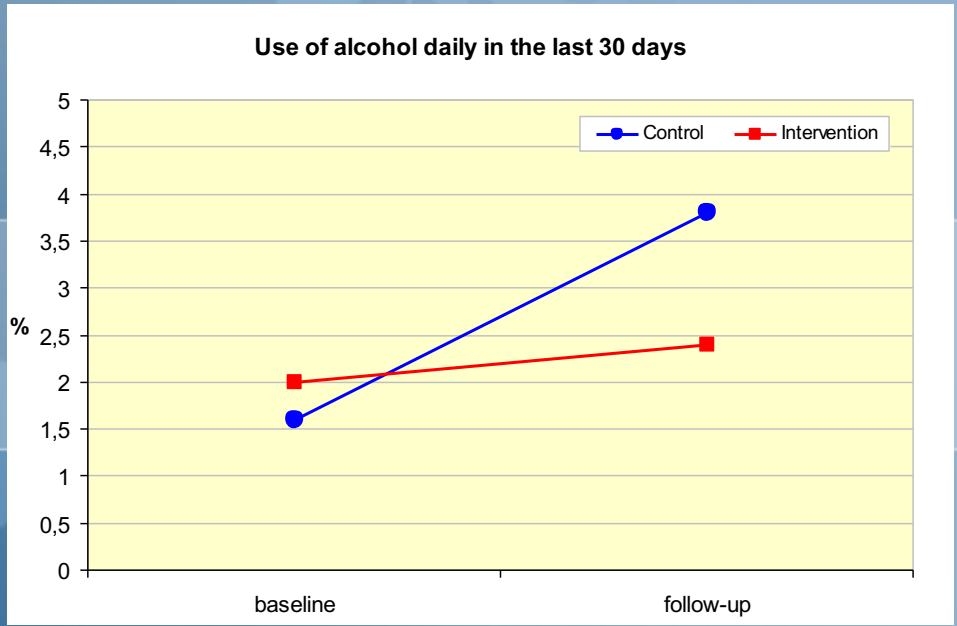




The proportion of pupils declaring to have smoked cigarettes regularly and daily in the last 30 days **increased LESS** in intervention vs control pupils from baseline to follow-up

Alcohol drinking





The proportion of pupils declaring to have drunk alcohol regularly and daily in the last 30 days **increased LESS** in intervention vs control pupils from baseline to follow-up

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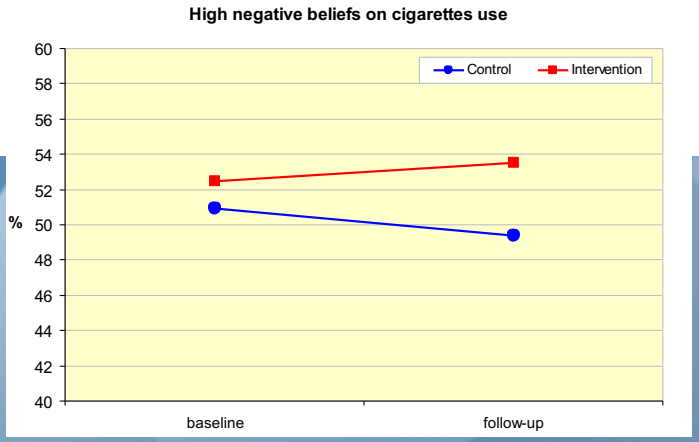

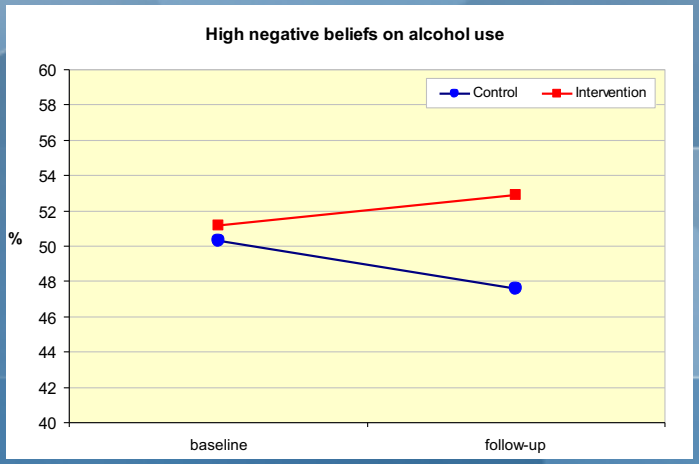

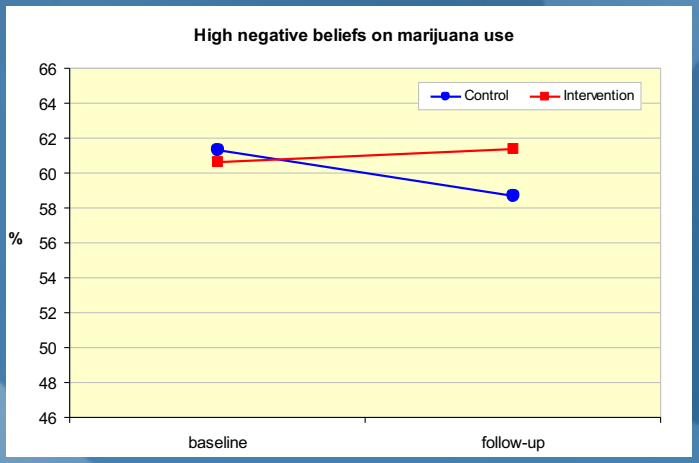

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Negative beliefs

At follow-up versus baseline, negative beliefs about tobacco, alcohol and marijuana increased among intervention and reduced among control students

Crude versus adjusted effect

- The effect of the program as shown graphically in the previous figures is however not completely reliable
- It is needed indeed to adjust for
  - Cluster effect (similarity of pupils within the zones, schools and classes)
  - Different prevalence of use by zone
  - Confounding factors

- With this aim, multilevel adjusted models were run, fitting geo-political zone as I level, and adding baseline level of the outcome, age, and the zone's baseline prevalence of tobacco, alcohol or marijuana specific for the outcome as potential confounders.

Adj effect of Unplugged on substance use in the last 30 days

Behaviours in the last 30 days	Overal sample		10-14 years old	
	Odds Ratios (95% CI)	Risk reduction	Odds Ratios (95% CI)	Risk reduction
Cigarette use				
At least once	0.84 (0.56-1.27)	-16%	0.61 (0.21-1.73)	-39%
>6 times (regular)	0.54 (0.28-1.06)	-46%		
>20 times (daily)	0.45 (0.20-1.09)	-55%		
Alcohol drinking				
At least once	**0.82 (0.69-0.98)**	**-18%**	**0.71 (0.53-0.94)**	**-29%**
>6 times (regular)	**0.74 (0.58-0.94)**	**-26%**	**0.58 (0.38-0.86)**	**-42%**
>20 times (daily)	**0.61 (0.40-0.95)**	**-39%**	0.83 (0.38-1.82)	-17%
Cannabis use				
At least once	0.81 (0.51-1.29)	-19%	**0.17 (0.03-0.86)**	**-83%**
>6 times (regular)	0.82 (0.46-1.45)	-18%		

The program is effective in reducing the proportion of alcohol and cannabis users at follow-up:
- with a stronger effect on alcohol among 10-14 years old pupils
- and an effect on cannabis only among 10-14 years old pupils

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Adjusted effect of Unplugged on possible mediators

	Overal sample		10-14 years old	
	Odds Ratios (95% CI)	Improvement	Odds Ratios (95% CI)	Improvement
Negative beliefs				
on cigarettes	**1.17 (1.00-1.38)**	**+17%**	1.13 (0.89-1.43)	+13%
on alcohol	**1.25 (1.07-1.46)**	**+25%**	**1.25 (0.99-1.59)**	**+25%**
on marijuana or other drugs	1.15 (0.97-1.35)	+15%	1.06 (0.82-1.36)	+6%
Good class climate	**1.35 (1.13-1.63)**	**+35%**	**1.49 (1.14-1.96)**	**+49%**
Low peer's prevalence				
smoke cigarettes	**1.39 (1.19-1.62)**	**+39%**	**1.59 (1.25-2.02)**	**+59%**
drink alcohol	**1.34 (1.15-1.56)**	**+34%**	**1.43 (1.14-1.80)**	**+43%**
get drunk	**1.29 (1.11-1.51)**	**+29%**	**1.35 (1.07-1.70)**	**+35%**
marijuana or other drug use	**1.19 (1.03-1.39)**	**+19%**	1.19 (0.95-1.50)	+19%

The program increased negative beliefs on cigarettes and alcohol, reduced the perception of peer's use, and improved class climate.

(to be studied as mediators of the program effect)

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Conclusions

From these results, we can conclude that **Unplugged reached in Nigeria good results in preventing alcohol and cannabis use, increasing negative beliefs, improving class climate, and correcting normative beliefs**. Therefore, the implementation of Unplugged at a larger scale in the country can be supported, with the attention of focusing on **younger adolescents**.

The trial adds evidence on the effect of skill-based programs implemented in the school setting for the prevention of tobacco, alcohol, and drugs use among adolescents in low-income countries.

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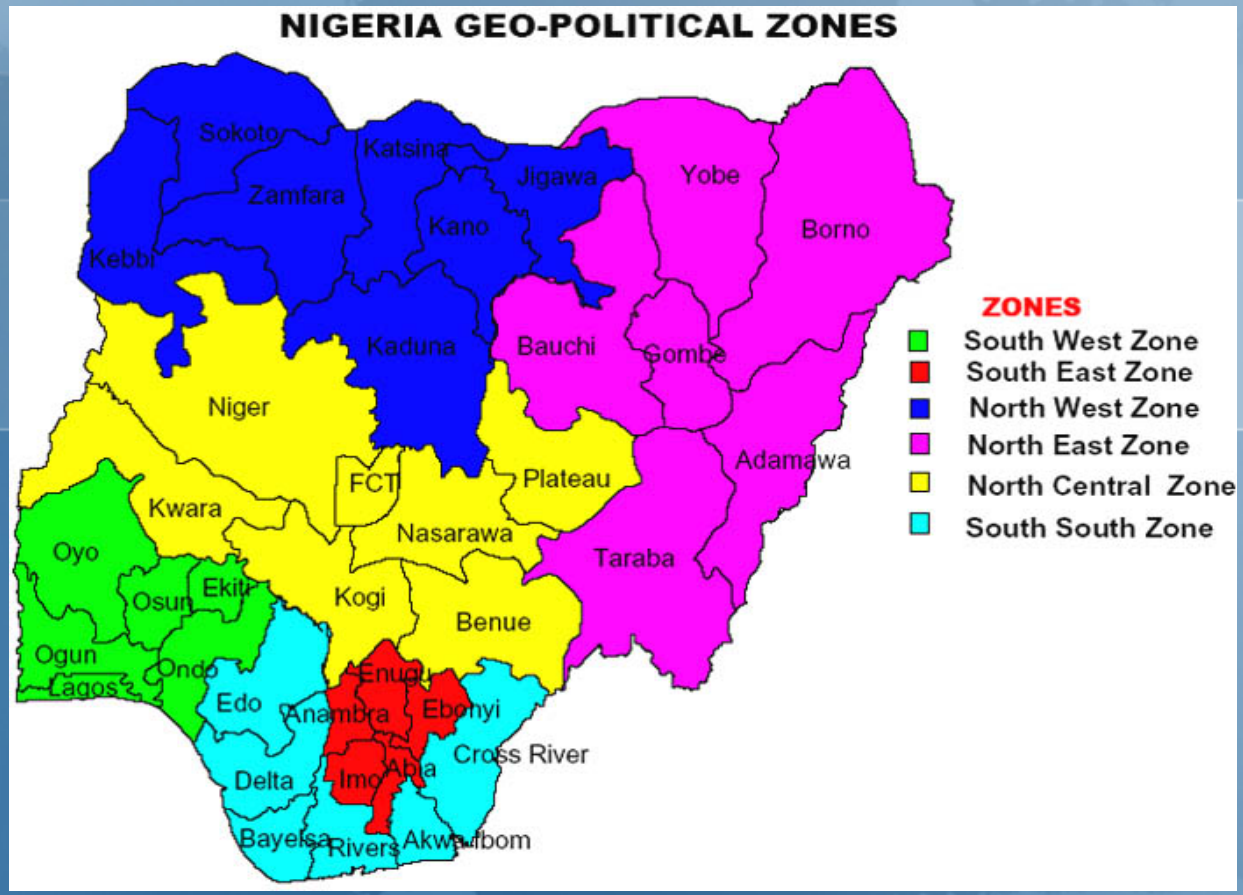
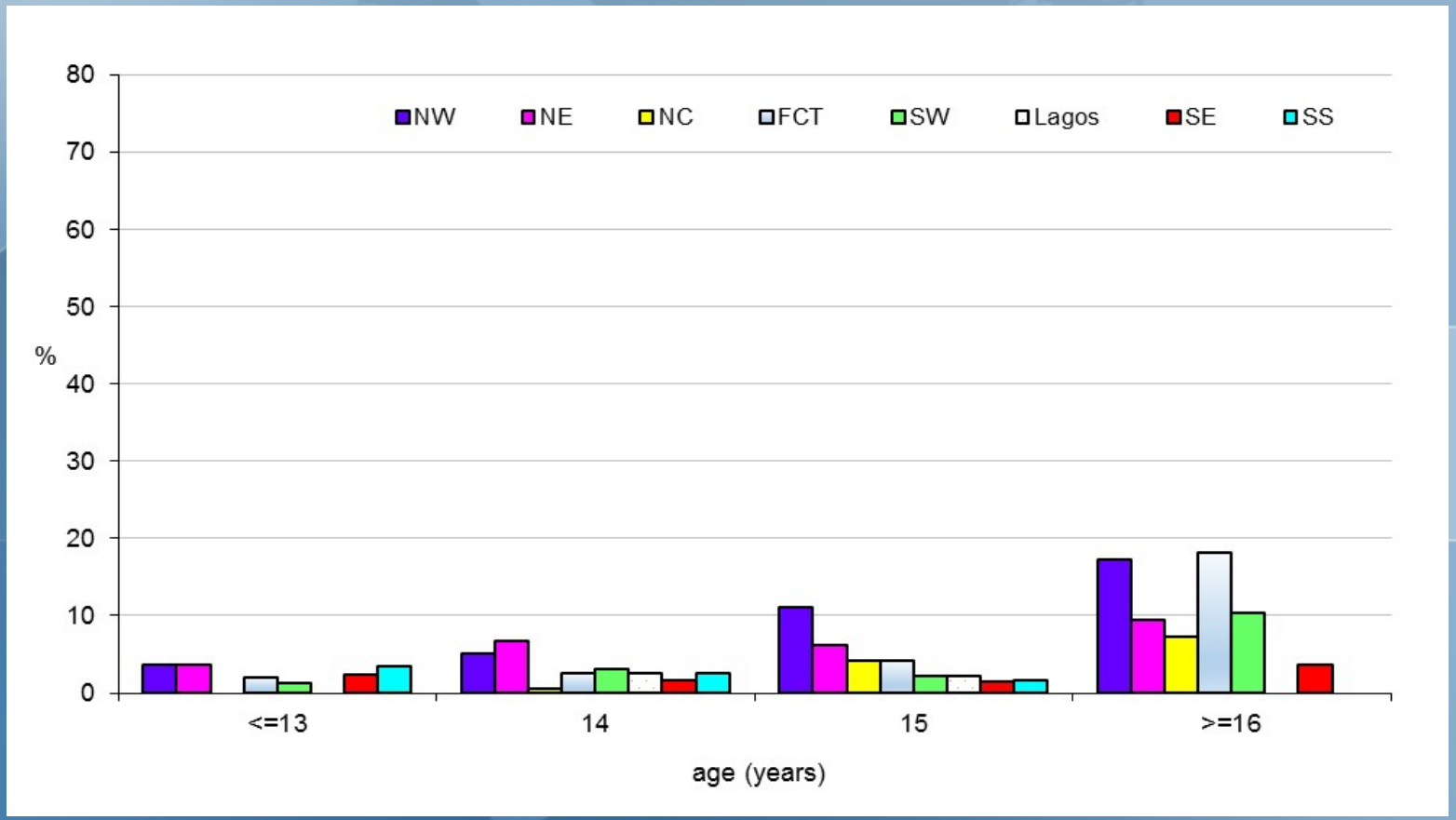
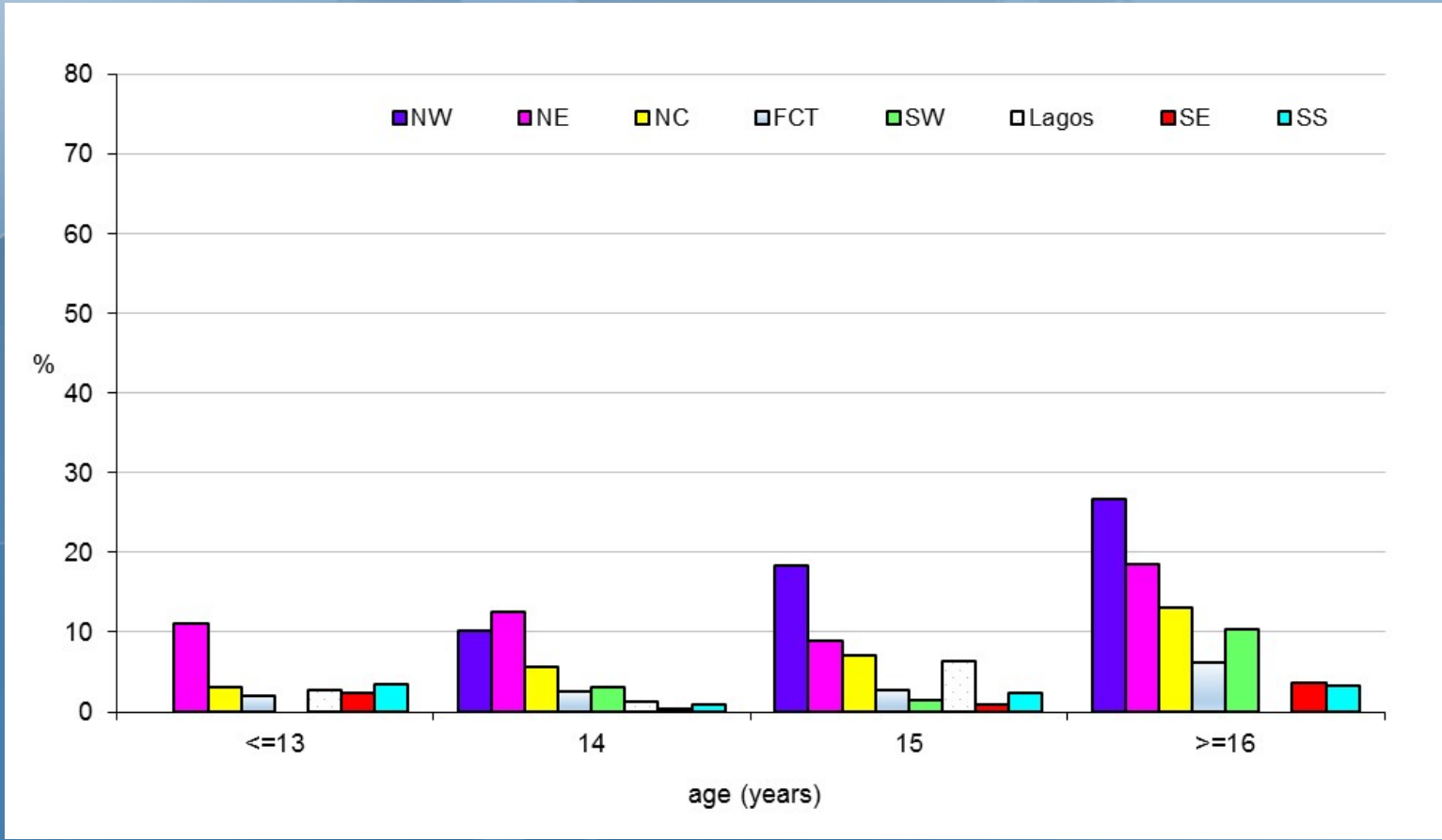
Many differences between geo-political zones

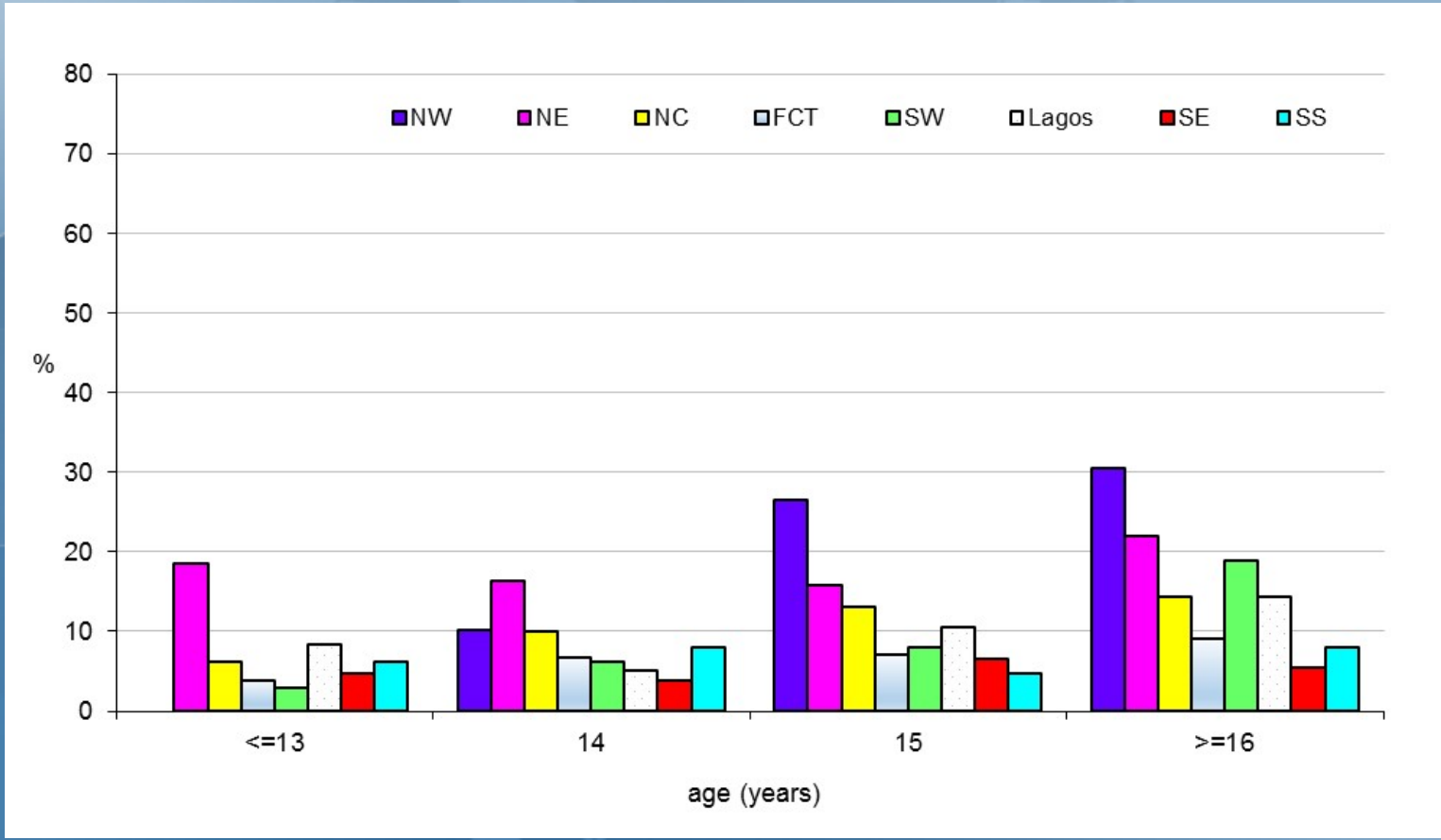




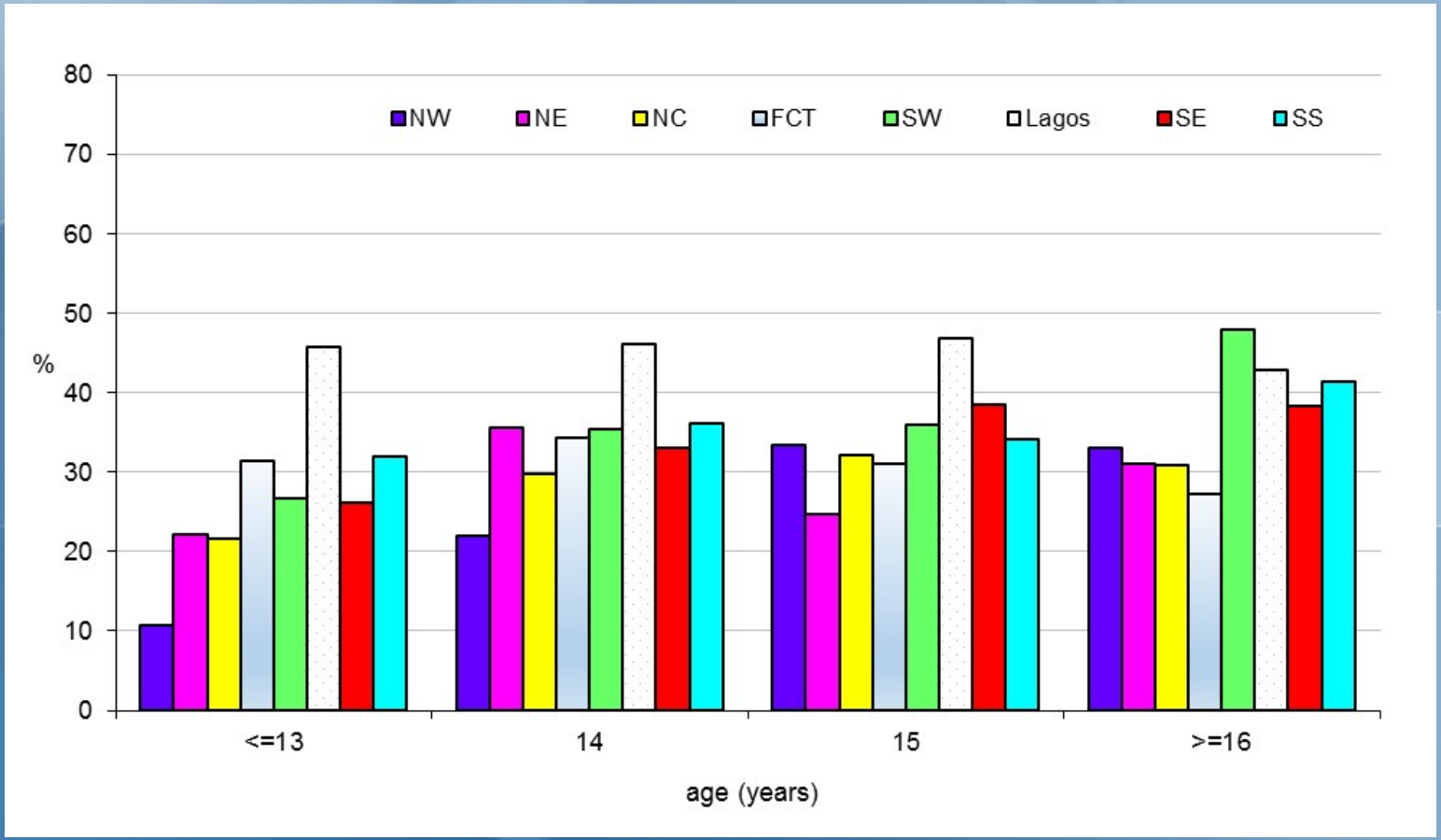
Lifetime cigarettes use was higher in Northern zones.



Lifetime cannabis use was higher in Northern zones.



Lifetime other drugs use was higher in Northern zones.



Lifetime alcohol use was higher in Lagos and Southern zones.

ADJUSTED DIFFERENCES; South West set as reference; SS and FCT did not show significant differences from SW

	North West OR (95% CI)	North East OR (95% CI)	North Central OR (95% CI)	Lagos State OR (95% CI)	South East OR (95% CI)
Cigarette use					
Lifetime	**2.91 (1.69,5.01)**	**2.01 (1.11,3.62)**	0.88 (0.45,1.73)	0.56 (0.21,1.50)	0.52 (0.24,1.12)
Last 30 days	**4.33 (1.90,9.87)**	2.36 (0.96,5.80)	0.56 (0.17,1.91)	0.61 (0.13,2.89)	0.28 (0.06,1.31)
Alcohol use					
Lifetime	**0.68 (0.53,0.88)**	0.77 (0.59,1.00)	0.79 (0.61,1.02)	**1.54 (1.15,2.04)**	1.01 (0.80,1.28)
Last 30 days	**1.59 (1.10,2.32)**	**1.54 (1.03,2.29)**	**1.81 (1.25,2.61)**	**1.59 (1.03,2.44)**	1.40 (0.96,2.02)
Cannabis use					
Lifetime	**5.29 (3.05,9.19)**	**3.94 (2.21,7.03)**	**2.19 (1.20,4.00)**	1.08 (0.44,2.65)	**0.31 (0.12,0.86)**
Last 30 days	**6.32 (2.13,18.7)**	**3.72 (1.17,11.8)**	3.13 (0.99,9.93)	1.24 (0.23,6.84)	0.55 (0.10,3.01)
Other drugs use					
Lifetime	**3.00 (2.05,4.39)**	**2.29 (1.52,3.43)**	1.47 (0.97,2.22)	1.05 (0.60,1.84)	0.62 (0.38,1.03)
Last 30 days	**2.75 (1.51,5.00)**	1.78 (0.93,3.41)	1.28 (0.65,2.50)	0.70 (0.26,1.90)	0.57 (0.25,1.28)
Knowledge					
on tobacco	**0.48 (0.38,0.62)**	0.87 (0.68,1.12)	0.99 (0.79,1.26)	1.08 (0.82,1.43)	1.16 (0.93,1.46)
on alcohol	0.88 (0.68,1.13)	1.10 (0.85,1.44)	1.17 (0.91,1.51)	1.16 (0.86,1.57)	0.97 (0.76,1.23)
on marijuana/drugs	0.95 (0.74,1.23)	1.16 (0.89,1.52)	1.18 (0.92,1.51)	0.87 (0.65,1.16)	1.14 (0.90,1.44)
Positive beliefs					
on tobacco	**2.42 (1.81,3.24)**	**2.22 (1.64,3.01)**	1.27 (0.93,1.72)	0.74 (0.49,1.11)	**0.72 (0.52,1.00)**
on alcohol	**1.87 (1.41,2.49)**	**1.52 (1.12,2.06)**	1.14 (0.84,1.53)	0.70 (0.47,1.04)	**0.62 (0.45,0.86)**
on marijuana/drugs	**1.87 (1.40,2.50)**	**1.59 (1.17,2.16)**	1.16 (0.86,1.58)	0.70 (0.46,1.05)	0.82 (0.60,1.12)
Positive attitudes towards drugs	**3.84 (2.38,6.20)**	1.14 (0.64,2.05)	1.00 (0.56,1.77)	0.48 (0.20,1.18)	0.70 (0.38,1.28)

CORRELATES OF ALCOHOL USE

- High SES
- One parent
- Parental drink
- Parental permissiveness
- Friends drink
- Low risk perc
- High positive beliefs

NO DIFF ALCOHOL VS DRUNK (JUST SES)

	Ever alcohol use (n=3,689)	Ever been drunk (n=3,690)
Family possession of car		
None	1	1
One	**1.26 (1.02-1.56)**	1.20 (0.89-1.62)
Two or more	**1.30 (1.04-1.63)**	1.26 (0.92-1.72)
Family composition		
Both parents	1	1
One parent	**1.37 (1.01-1.86)**	1.03 (0.67-1.57)
Other	**1.27 (1.08-1.50)**	**1.26 (1.00-1.58)**
Parents drink alcohol		
No	1	1
Yes	**3.00 (2.48-3.64)**	**2.64 (2.06-3.38)**
Parental permissiveness to drink alcohol		
Wouldn't allow at all	1	1
Would not allow at home	**2.46 (1.74-3.48)**	**2.12 (1.42-3.16)**
Would allow	**4.69 (2.62-8.40)**	**2.08 (1.21-3.59)**
Friends drink alcohol/get drunk*		
No	1	1
Yes	**3.45 (2.79-4.27)**	**3.22 (2.38-4.38)**
Risk perception on having 1/2 drinks/week		
Great risk	1	1
Slight risk	**1.43 (1.14-1.80)**	**1.39 (1.00-1.94)**
No risk	**1.88 (1.44-2.47)**	**1.43 (0.99-2.09)**
Risk perception on drinking alcohol every day		
Great risk	1	1
Slight risk	**1.53 (1.19-1.97)**	**1.58 (1.16-2.17)**
No risk	**1.84 (1.22-2.78)**	**2.19 (1.32-3.62)**
Positive beliefs toward alcohol		
Low	1	1
Middle/High	**1.24 (1.05-1.46)**	**1.45 (1.15-1.84)**

CORRELATES OF CANNABIS AND DRUG USE

- High SES
- One parent
- Parental smok
- Parental permissiveness
- Friends using
- Low risk perc
- High positive beliefs

NO DIFF CANNABIS VS DRUGS (JUST SES)

	Lifetime cannabis use Adj OR (95% CI) n=3,710	Lifetime drugs use Adj OR (95% CI) n=3,724
Family possession of car		
None	1	
One	**1.95 (1.20-3.18)**	-
Two or more	**1.82 (1.10-3.00)**	
Family composition		
Both parents	1	1
One parent	**1.74 (1.06-2.87)**	**1.53 (1.03-2.25)**
Other	**1.49 (1.07-2.07)**	**1.32 (1.04-1.67)**
Parents smoke cigarettes		
No	1	1
Yes	**2.63 (1.49-4.64)**	**2.69 (1.71-4.23)**
Parental permissiveness to drink		
Wouldn't allow at all	1	1
Would not allow at home	**2.65 (1.54-4.56)**	**2.01 (1.32-3.06)**
Would allow	**5.52 (2.94-10.4)**	**4.23 (2.53-7.08)**
Friends use marijuana or other illicit drugs		
No	1	1
Yes	**5.89 (3.93-8.81)**	**3.96 (2.80-5.61)**
Risk perception on smoking marijuana regularly		
Risk perception on using other drugs occasionally		
Great risk	1	1
Slight risk	**4.36 (2.68-7.08)**	**1.45 (1.09-1.92)**
No risk	**2.23 (1.29-3.88)**	**2.42 (1.69-3.47)**
Positive beliefs toward cannabis and other drug use		
Low	1	1
Middle/High	**2.99 (1.92-4.65)**	**1.92 (1.46-2.52)**

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VERY INTERESTING SCIENTIFIC RESULTS FROM THE STUDY IN NIGERIA

THANKS TO ALL NIGERIAN FRIENDS WHO MAKE THIS POSSIBLE