A Survey Experiment on How the Legal Status of Nicotine Products Influences Young Adults' Perceptions and Choices

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Disclosure:

Tobacco Control Policy Environment in Turkiye

Turkiye's Public Health Commitment

1. **Milestone Achievement:** Turkiye is the 1ˢᵗ country to fully adopt all WHO MPOWER tobacco control measures. Implementation of Plain Packaging (PP) and intensified graphic and text health warnings since January 2020

2. **Tobacco Harm Reduction Import Ban (February 2020):** Turkiye enforces a ban on the import of all THRPs. This ban covers e-cigarettes, heated tobacco products (HTPs), electronic devices, spare parts and associated solutions

3. **Exception for Personal Imports:** Individuals are allowed personal imports as one device per person along with cartridges or solutions up to 30 ml. Alternatively, individuals can import up to 10 disposable e-cigarettes in total.

<u>Data collection</u>:
Online survey of young adults (ages 18-30) in Turkiye

- Whether a user of cigarettes
- Whether a user of cigarette-like products (vapes, HTPs),

➢ Experimental module (with ever-users and never-users randomly allocated to 4 conditions, a total of 8 groups)

- Nicotine dependency
- Age of initiation
- Knowledge about nicotine
- Knowledge about the legal status of products
- Health risk perceptions
- Positive/negative opinions about the products
- Concerned about the contents of the products

<u>Demographics</u>:
- Age of the respondent, Gender, Region, Disposable income, Own education, Mother's education, Father's education

Data collection:
Sample design: 50% ever users, 50% never users of combustible and non-combustible nicotine products
Total sample size = 3008

Descriptives: Ever Users (Smokers, Vapers)	N	%
Dual Users	729	43.2%
Exclusive Cigarette Smokers	680	40.3%
Exclusive E-cigarette/HTP Users	124	7.4%
Past Users (past smokers, vapers)	153	9.1%
Total	1686	100%

Experimental Conditions

- Condition 1: (Legal Cigarette) A legally sold cigarette

- Condition 2: (Illegal Cigarette) A cigarette that is sold unrecorded (under-the-counter)

- Condition 3: (Legal E-Cigarette) A legally sold cigarette-like product (such as an e-cigarette or a heated tobacco product)

- Condition 4: (Illegal E-Cigarette) A cigarette-like product that is sold unrecorded (under-the-counter)

Experimental Conditions

One the following four texts was shown to respondents in each condition:

Condition 1 / 2/ 3/ 4:

Imagine that you wanted to use a nicotine product. The product that is available for your purchase is **legally sold cigarettes / cigarettes that are sold under-the-counter (an unrecorded sale) / a non-combustible nicotine product that is sold legally / a non-combustible nicotine product that is sold under-the-counter**.

This is the only product currently available for you to purchase. The product is the same in terms of price, nicotine content, warning labels, and flavor as an average pack of legally sold cigarettes normally found in supermarkets or grocery stores.

- In Conditions 2 and 4, the following sentence was added to the text:

The only difference is that the sale of this product will be unrecorded and under-the-counter.

Randomization across conditions

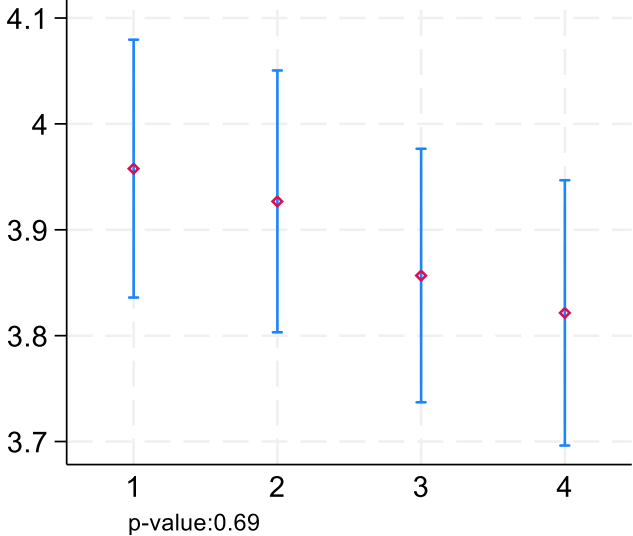|	p-value
Gender	0.78
Age Group	0.65
Education	0.73
Disposable Income	0.76
User Status	0.99
Ever user	
Never user	
User Type	0.92
Dual User	
E-cigarrette only	
Cigarette only	
Non-user	
Nicotine Addiction	0.11
Legal Knowledge	0.90
Nicotine Knowledge	0.58

Reported:
p-values of chi-square tests for equality of percentages across conditions.

Outcome variables (1-5 Likert scale)

1) I think this product is addictive.

2) I think this product may cause medical complaints such as a bad cough, cold, trouble catching breath, mouth sores.

3) I think this product may cause serious diseases such as lung cancer.

4) I think this product is socially acceptable; it is OK to use this product in a social setting.

5) I would be interested in using/trying this product.

6) If this product were the only one available on the market, I would prefer using nothing to using this product.

7) Among 100 users of this product, how many do you think will die from lung cancer, heart disease, throat cancer and all other illnesses because of using this product?

95 % CI: Only Ever-users
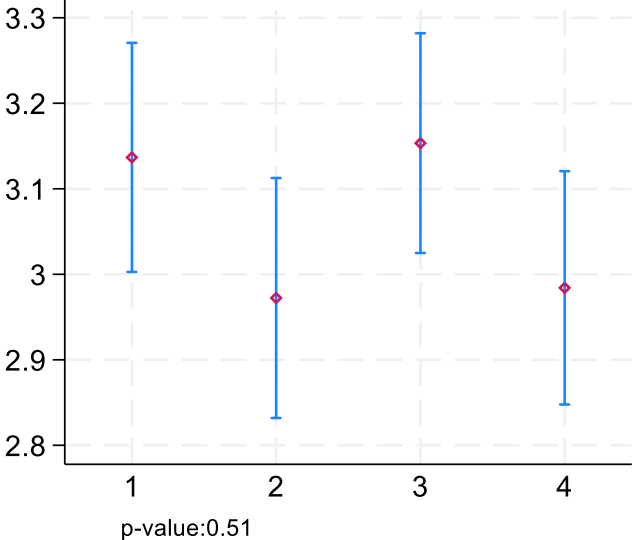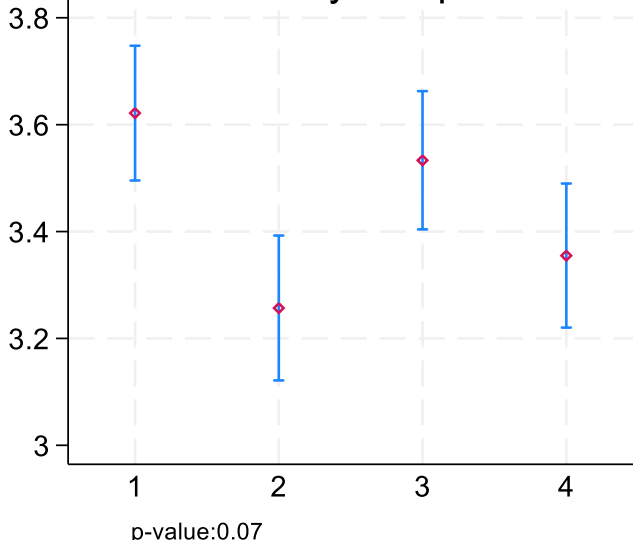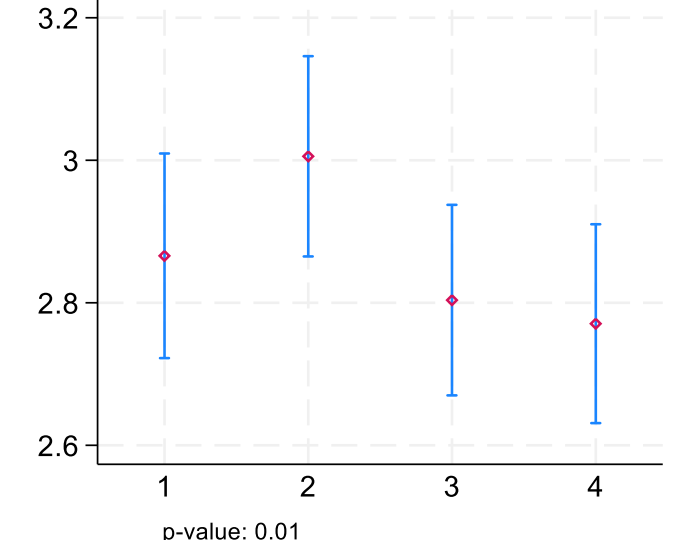
Empirical Framework (OLS estimation)

$$\text{Outcome}_i = \beta1 + \beta2 \cdot C2_i + \beta3 \cdot C3_i + \beta4 \cdot C4_i + \beta5 \cdot S_i + \beta6 \cdot S_i \cdot C2_i$$
$$+ \beta7 \cdot S_i \cdot C3_i + \beta8 \cdot S_i \cdot C4_i + \mu Xi + \varepsilon_i$$

- β's are the coefficients to be estimated.

- C2: Dummy variable for being assigned to Condition 2. (Condition 1 omitted)

- C3: Dummy variable for being assigned to Condition 3.

- C4: Dummy variable for being assigned to Condition 4.

- S : Dummy variable for being an ever-user of a cigarette or a cigarette-like product.

- Xi includes gender, age group, region, disposable income, individual's education, mother's education and father's education

The following three slides show the estimates from the same set of regressions (2nd and 3rd are for women and men separately).

Results:

Compared to legal cigarettes (the omitted category), ever-users think illegal cigarettes and e-cigarettes cause more discomfort and more disease.

Compared to legal cigarettes, ever-users would be less interested in using illegal cigarettes and e-cigarettes.

The results are stronger for women than for men.

Experimental Module: Effect of Legal Status

	Addictive	Causes Discomfort	Causes Disease	Socially Acceptable	Can use	Would Not Use	% Chronic Disease
İllegal Cigarette	-0.179**	-0.148*	-0.194**	-0.012	0.018	-0.189	-1.189
	(0.090)	(0.083)	(0.080)	(0.109)	(0.102)	(0.115)	(2.062)
Legal ECigarette	-0.133	-0.136	-0.192**	-0.017	0.073	-0.195*	-3.789*
	(0.089)	(0.083)	(0.083)	(0.109)	(0.102)	(0.114)	(2.080)
İllegal ECigarette	-0.089	-0.165**	-0.166**	-0.025	0.082	-0.063	-1.070
	(0.084)	(0.078)	(0.076)	(0.110)	(0.102)	(0.111)	(1.994)
Ever User	-0.188**	-0.553***	-0.418***	0.641***	1.543***	-0.874***	-11.484***
	(0.088)	(0.083)	(0.080)	(0.106)	(0.099)	(0.110)	(2.166)
İllegal Cigarette x Ever User	0.189	0.349***	0.295***	-0.120	-0.455***	0.369**	0.027
	(0.125)	(0.118)	(0.114)	(0.148)	(0.141)	(0.155)	(3.033)
Legal Ecigarette x Ever User	0.063	0.103	0.100	0.010	-0.154	0.173	1.497
	(0.124)	(0.120)	(0.118)	(0.145)	(0.138)	(0.153)	(3.041)
İllegal Ecigarette x Ever User	-0.027	0.233**	0.139	-0.128	-0.320**	-0.012	1.639
	(0.122)	(0.115)	(0.112)	(0.147)	(0.140)	(0.152)	(2.962)
Women	0.028	0.113**	0.092**	-0.077	-0.016	-0.006	5.250***
	(0.046)	(0.045)	(0.044)	(0.055)	(0.052)	(0.058)	(1.138)
Observations	2,933	2,925	2,915	2,916	2,908	2,844	3,008

Notes: Regressions control for gender, age group, region, disposable income, individual's education, mother's education and father's education. Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Experimental Module: Effect of Legal Status (Women)

	Addictive	Causes Discomfort	Causes Disease	Socially Acceptable	Can use	Would Not Use	% Chronic Disease
Illegal Cigarette	-0.214	-0.089	**-0.205****	0.188	0.050	-0.263	0.322
	(0.130)	(0.114)	(0.103)	(0.159)	(0.146)	(0.173)	(2.972)
Legal E-Cigarette	-0.107	-0.113	**-0.288*****	0.218	0.199	-0.214	**-4.987***
	(0.123)	(0.110)	(0.105)	(0.153)	(0.145)	(0.166)	(2.978)
İllegal E-Cigarette	-0.084	-0.172	**-0.222****	-0.087	0.085	-0.039	-2.344
	(0.122)	(0.110)	(0.100)	(0.153)	(0.144)	(0.165)	(2.815)
Ever User	**-0.230***	**-0.553*****	**-0.509*****	**0.931*****	**1.643*****	**-0.932*****	**-11.501*****
	(0.119)	(0.111)	(0.099)	(0.145)	(0.135)	(0.157)	(2.916)
Illegal Cigarette x Ever User	0.368**	**0.376****	**0.404*****	**-0.352***	**-0.425****	**0.537****	0.926
	(0.171)	(0.159)	(0.147)	(0.205)	(0.193)	(0.221)	(4.172)
Legal E-cigarette x Ever User	0.061	0.075	0.193	**-0.403****	-0.183	0.255	3.787
	(0.167)	(0.158)	(0.152)	(0.200)	(0.190)	(0.215)	(4.207)
İllegal E-cigarette x Ever User	-0.077	0.196	0.174	-0.192	**-0.367***	0.023	1.629
	(0.169)	(0.158)	(0.148)	(0.203)	(0.193)	(0.218)	(4.088)
Observations	1,480	1,474	1,463	1,477	1,468	1,430	1,523

Notes: Regressions control for age group, region, disposable income, individual's education, mother's education and father's education. Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Experimental Module: Effect of Legal Status (Men)

	Addictive	Causes Discomfort	Causes Disease	Socially Acceptable	Can use	Would Not Use	% Chronic Disease
Illegal Cigarette	-0.142	**-0.212***	**-0.200***	-0.183	-0.009	-0.127	-2.542
	(0.126)	(0.120)	(0.119)	(0.151)	(0.145)	(0.156)	(2.877)
Legal E-Cigarette	-0.160	-0.165	-0.106	-0.240	-0.041	-0.179	-2.866
	(0.129)	(0.124)	(0.125)	(0.156)	(0.146)	(0.162)	(2.942)
İllegal E-Cigarette	-0.076	-0.156	-0.123	0.079	0.090	-0.096	0.360
	(0.118)	(0.111)	(0.112)	(0.155)	(0.146)	(0.151)	(2.823)
Ever User	-0.164	**-0.566***	**-0.356***	**0.369**	**1.448***	**-0.858***	**-11.556***
	(0.134)	(0.127)	(0.125)	(0.156)	(0.151)	(0.159)	(3.326)
Illegal Cigarette x Ever User	-0.025	**0.315***	0.183	0.068	**-0.503**	0.165	-1.056
	(0.187)	(0.179)	(0.176)	(0.217)	(0.210)	(0.225)	(4.478)
Legal E-cigarette x Ever User	0.067	0.145	0.017	**0.439**	-0.132	0.096	-0.229
	(0.186)	(0.182)	(0.181)	(0.213)	(0.204)	(0.222)	(4.468)
İllegal E-cigarette x Ever User	0.009	0.266	0.111	-0.065	-0.262	-0.017	1.600
	(0.180)	(0.171)	(0.168)	(0.213)	(0.205)	(0.217)	(4.351)
Observations	1,453	1,451	1,452	1,439	1,440	1,414	1,485

Notes: Regressions control for age group, region, disposable income, individual's education, mother's education and father's education. Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

The next two slides further investigate the effects detected in the previous four slides.

In particular, we ask if the results are due to the product type (cigarettes vs. e-cigarettes) or legality (legal vs. illegal products).

Results:

1st slide (cigarettes vs. e-cigarettes): Conditions 1&2 are merged (cigarettes) and Conditions 3&4 are merged (e-cigarettes): NO EFFECT.

2nd slide (legal vs. illegal): Conditions 1&3 are merged (legal) and Conditions 2&4 are merged (illegal): EFFECTS DETECTED.

Evidently, what matters is not the type of the product, rather the legality of the product.

Cigarette vs E-cigarette (Cond 1&2 vs Cond 3 &4)

	Addictive	Causes Discomfort	Causes Disease	Socially Acceptable	Can use	Would Not Use	% Chronic Disease
Ecigarette (Cond 3 & 4)	-0.021	-0.075	-0.079	-0.017	0.067	-0.037	-1.886
	(0.063)	(0.058)	(0.058)	(0.077)	(0.072)	(0.081)	(1.448)
Ever User	-0.097	-0.384***	-0.275***	0.587***	1.317***	-0.682***	-11.316***
	(0.065)	(0.060)	(0.059)	(0.075)	(0.073)	(0.080)	(1.540)
Ecigarette X Ever User	-0.077	-0.006	-0.030	0.004	-0.004	-0.104	1.572
	(0.088)	(0.084)	(0.082)	(0.103)	(0.099)	(0.109)	(2.120)
Women	0.031	0.118***	0.096**	-0.085	-0.023	-0.011	5.109***
	(0.046)	(0.045)	(0.044)	(0.055)	(0.052)	(0.058)	(1.138)
Legal Knowledge	0.031***	0.046***	0.053***	-0.054***	-0.041***	-0.033**	-1.091***
	(0.012)	(0.011)	(0.011)	(0.014)	(0.013)	(0.014)	(0.280)
Observations	2,933	2,925	2,915	2,916	2,908	2,844	3,008

Legal vs Illegal Products (Cond 1&3 vs Cond 2&4)

	Addictive	Causes Discomfort	Causes Disease	Socially Acceptable	Can use	Would Not Use	% Chronic Disease
Illegal Products (Cond 2 & 4)	-0.065	-0.085	-0.082	-0.011	0.012	-0.025	0.737
	(0.064)	(0.059)	(0.058)	(0.077)	(0.072)	(0.081)	(1.447)
Ever User	-0.161**	-0.509***	-0.377***	0.658***	1.473***	-0.776***	-10.475***
	(0.064)	(0.062)	(0.060)	(0.075)	(0.070)	(0.078)	(1.544)
Illegal Products X Ever User	0.052	**0.245***	**0.176**	-0.138	**-0.319***	0.082	-0.087
	(0.088)	(0.084)	(0.082)	(0.104)	(0.099)	(0.109)	(2.118)
Women	0.032	0.118***	0.096**	-0.084	-0.021	-0.010	5.071***
	(0.046)	(0.045)	(0.044)	(0.055)	(0.052)	(0.058)	(1.137)
Legal Knowledge	0.030***	0.047***	0.053***	-0.055***	-0.043***	-0.033**	-1.083***
	(0.012)	(0.011)	(0.011)	(0.014)	(0.013)	(0.014)	(0.280)
Observations	2,933	2,925	2,915	2,916	2,908	2,844	3,008

Two Indices: (Statements and the correct answers shown below)

1) Nicotine Knowledge:
+1 for each correct answer, -1 for each incorrect answer. Ignore "I do not know"

Disagree   **1** I think nicotine is the substance in cigarettes and cigarette-like products that causes cancer.

Agree   **2** I think nicotine is addictive.

Agree   **3** I think the substances other than nicotine in combustible cigarettes cause cancer.

## 2) Legal Knowledge (knowledge about the legal status of the products in TR):
+1 for each correct answer, -1 for each incorrect answer. Ignore "I do not know"

True   **1** The sale of packaged cigarettes is legal in Turkey.

False   **2** The sale of cigarette-like products (such as e-cigarettes) is legal in Turkey.

False   **3** The sale of hand-rolled cigarettes is legal in Turkey.

False   **4** The sale of packaged flavored cigarettes is legal in Turkey.

True   **5** In Turkey, the possession and use of e-cigarettes is permitted /not illegal.

False   **6** In Turkey, the use of e-cigarettes in closed public spaces is permitted.
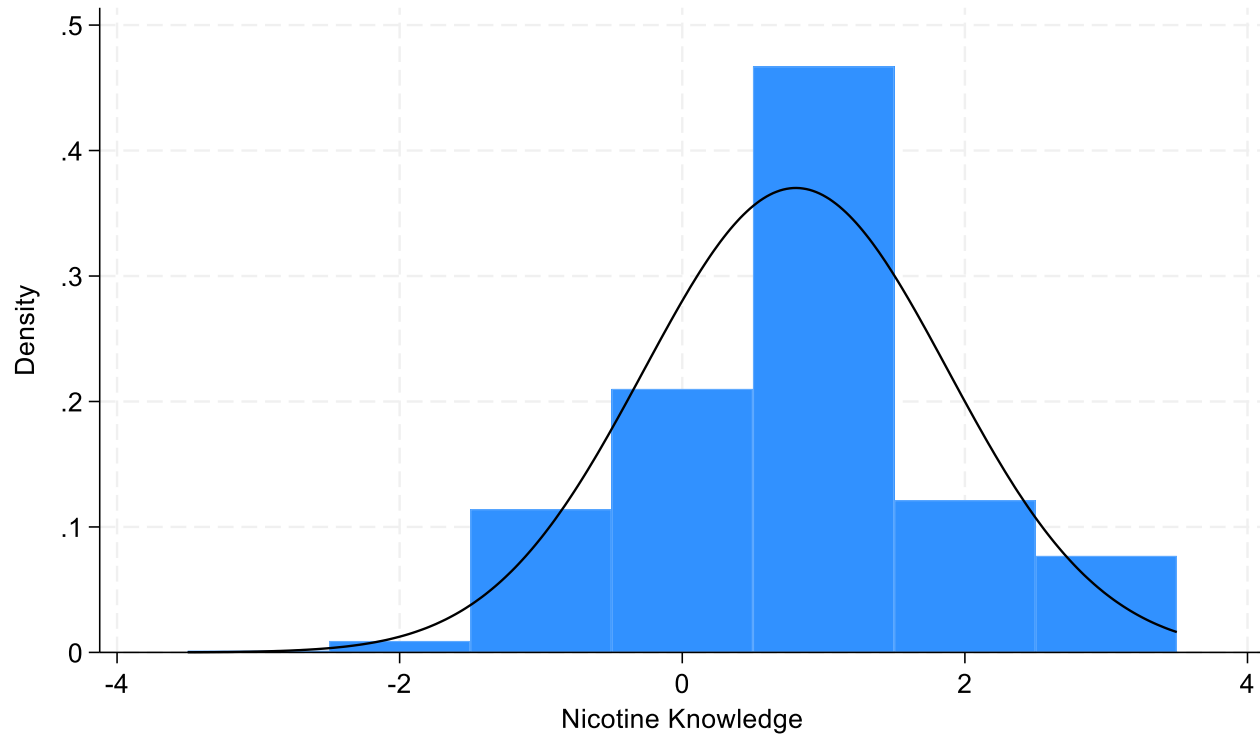
Descriptives: Knowledge: All Participants
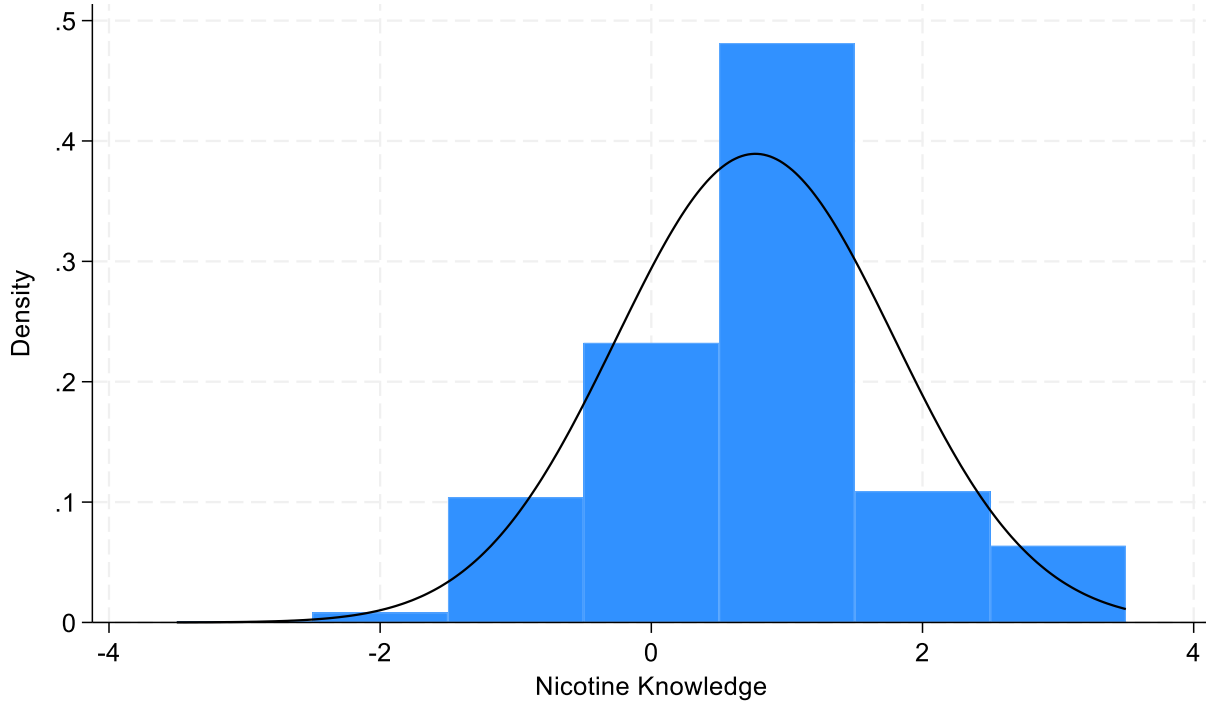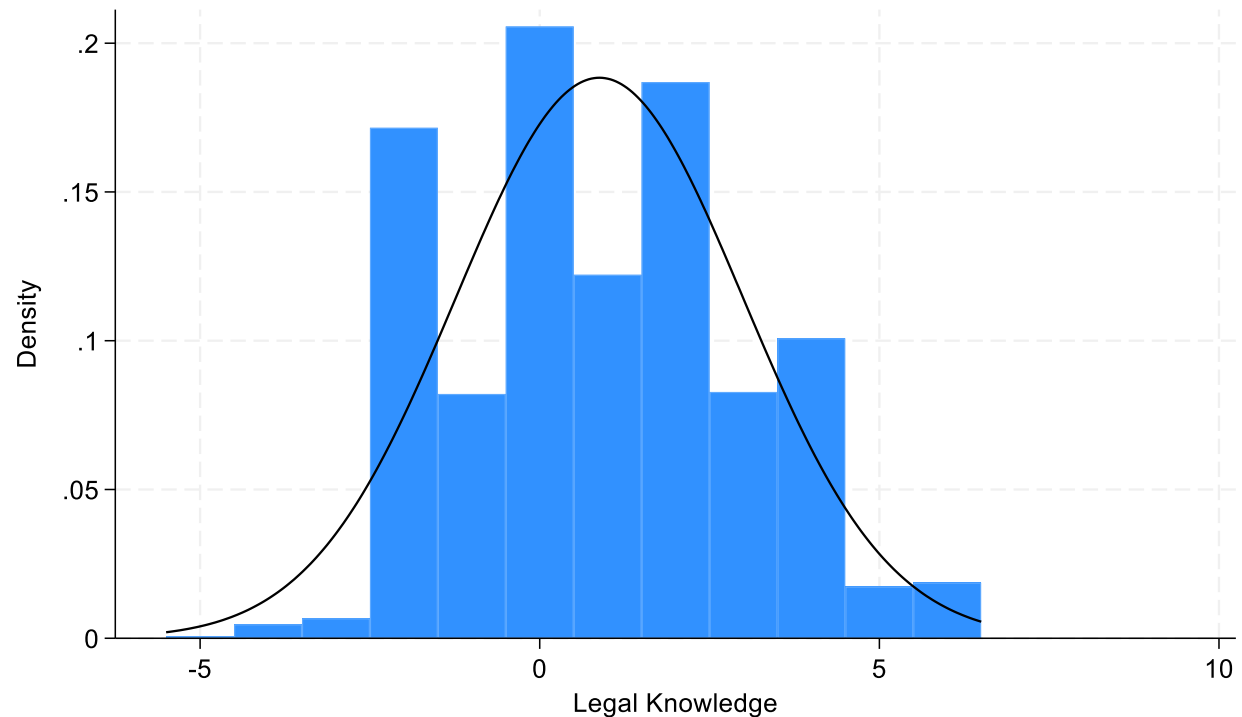

Nicotine Knowledge
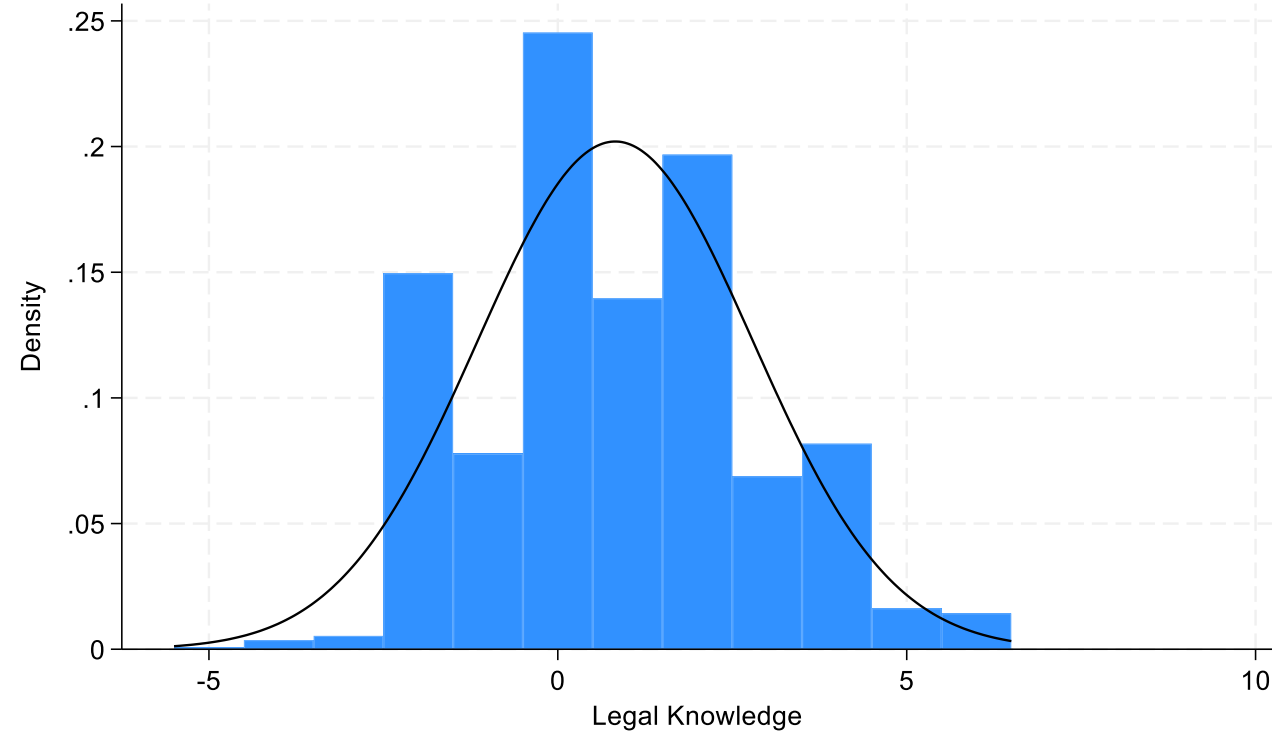
Legal Knowledge

Descriptives: Knowledge: Only Ever-users

Nicotine Knowledge

Legal Knowledge

The next slide shows how knowledge and perceptions differ across user types (exclusive smokers, exclusive e-cig users, dual users, and non-users).

Results:

E-cig and dual users have less (less correct) knowledge on nicotine and legality than smokers.

E-cig and dual users think e-cigs are less healthy than cigarettes, compared to smokers.

Nevertheless, they have in general more positive opinion about e-cigs and they are less concerned about the contents of e-cigs.

Knowledge and Opinions by User Type

	Legal Knowledge	Nicotine Knowledge	E-cigarette Healthier	Positive About E-cigarette	Less Concerned About Cigarette Content	Less Concerned About E-Cigarette Content
(Omitted: Exclusive Cigarette Smokers)						
Exclusive E-cigarette Users	-0.469**	-0.287***	-0.242***	0.147***	0.039	0.088**
	(0.192)	(0.105)	(0.045)	(0.047)	(0.038)	(0.040)
Dual Users	-0.824***	-0.110*	-0.053**	0.181***	-0.019	0.033*
	(0.111)	(0.058)	(0.027)	(0.025)	(0.019)	(0.019)
Non-users	-0.547***	-0.160***	-0.102***	-0.070***	-0.034**	-0.006
	(0.093)	(0.048)	(0.023)	(0.020)	(0.017)	(0.016)
Observations	3,008	3,008	2,707	2,853	3,008	3,008

Notes: Regressions control for age group, gender, region, disposable income, individual's education, mother's education and father's education. Robust standard errors in parentheses. *** $p<0.01$, ** $p<0.05$, * $p<0.1$

The next slide shows the reasons of users for using non-combustible nicotine products (e-cigs, HTPs). <u>Results:</u>

The most frequently cited reasons for using these products are:

➢ they smell nice; they allow flavor selection; they allow personalization; they can be used indoors.

Less frequently cited reasons for using these products are:

➢ they are good for transition or for reducing smoking; they are less harmful.

Descriptives:
The reasons for using non-combustibles (e-cigarettes, HTPs) (n=853)

Reason	Percentage
Smells nice	72%
Flavor selections	67%
Personalization	64%
Can use indoors	63%
To reduce smoking	51%
Adjustable nicotine	51%
Cost-effective	49%
Transition for quitting	47%
Trendy	42%
Less harmful	38%