Nutritional policy design: insights from the lab

Session 1B: Tools of the trade – value elicitation

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Value elicitation

How do we elicit value from subjects?

We sometimes need to know *how much people value stuff*. "Stuff" here can be products, policy options, their freedom, control over their data...

- value is the bedrock of demand;
- different value across people, space and time is the reason for trade;
- different values across options drives firms decisions
- value for policy options drives policy decisions

Value and price

A first experiment: **value** = **price**?

A simple Cola experiment

How much are you willing to pay for a coke can?

A simple Cola experiment

How much are you willing to pay for a coke can?

- Actual selling price will be drawn randomly $\sim U(0, 1)$.
- You are free to submit any offer – this is called **bid**
- If your price $\geq$ the hidden price, you **buy** at the hidden price
- If your price $\leq$ the hidden price, you do not buy.

- Write **your name** and **your willingness to pay** in the online form
- I'll reveal the price once *everyone has submitted their* **bid**

QR code

Experimental Economics: incentive-compatibility

If self-declared $\neq$ incentivized: hypothetical bias

- Usually self-declared price $>$ incentivized price
- A decision that results in *actual* consequences is called **incentive-compatible**
- i.e., real consequences + best strategy is to reveal your true preferences

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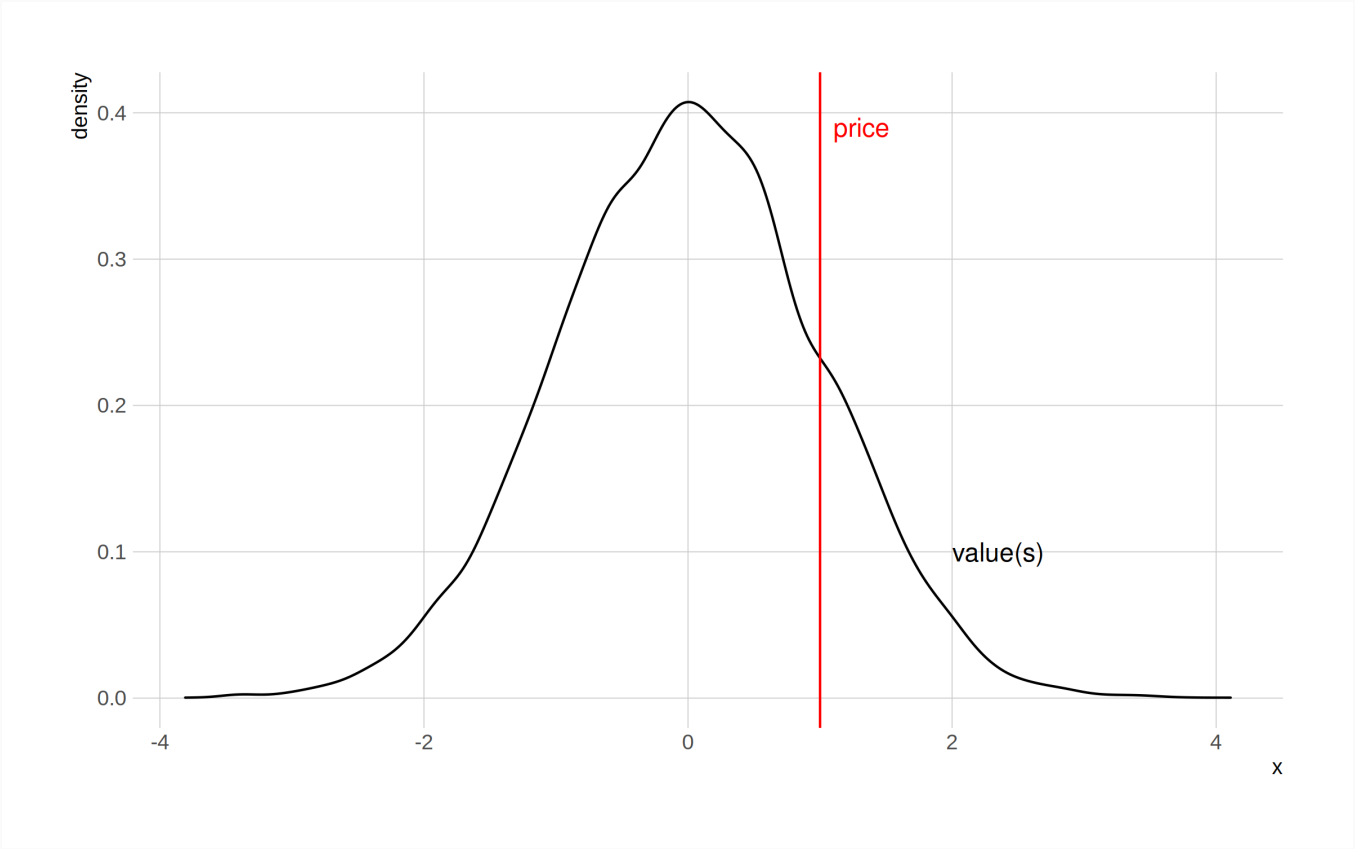
We go at great length to create incentive-compatible mechanisms

Value and price



Value $\neq$ price

- Value belongs to consumers, price is set by firms given market conditions
- value can be higher, lower or equal to price
- it is the amount of satisfaction (=utility) you derive from a good
- it is (also) the personal amount of resources you wish to allocate to a good
- value is influenced by prices
- transactions occur if value $>$ price: then consumers have a surplus (value - price)

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Value as willingness to pay

Value as Willingness to Pay (WTP)

We can operationalize value as willingness to pay (WTP)

- the amount of money a consumer wishes to allocate to a good **she does not yet have**
- Might depend on external conditions...
- ...good availability...
- ...information...
- ...existence of markets... etc.

Value elicitation: incentive compatibility

People could lie about their value, for a host of reason

- to get a personal advantage: *strategic* lying
- to foster their personal agenda: *political* lying
- to please the experimenter: *demand effect*
- unconsciously: *hypothetical bias* [remember?]
- just plain *error* or *inattention*

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we need incentive compatible mechanisms to elicit value

BDM mechanism

Random price mechanism: Becker-DeGroot-Marschak (BDM)

- subjects privately and simultaneously submit a sealed bid
- the selling price is drawn from a (known) uniform distribution on a (known) support
- if bid $\geq$ price, then object is bought at price
- if bid $<$ price, then no transaction
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Q: why the random price?

BDM mechanism – optimal strategy

BDM is incentive compatible: optimal strategy is to bid own real value

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- if $b_i < v_i$, then:
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- hence by bidding $b_i \neq v_i$ you have either a **loss** or a foreg**one gain**

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- hence by bidding $b_i \neq v_i$ you have either a **loss** or a foreg**one gain**
- the best you can do is bidding $b_i = v_i$

Auctions

BDM is a very basic kind of auction: other auctions are used

- sealed-bid *vs.* oral auctions
- first *vs.* second (or N^{th}) price auctions
- ascending or descending auctions

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N^{th} price auction

Sealed-bid 3^{rd} price auction: a milka chocolate bar

- you each submit a sealed bid here.
- the **two** highest bids buy the object...
- ...at the **third** highest price.

QR code

Nth price auction – optimal strategy

Optimal strategy is to bid your value

- ...if you bid higher, you risk buying at too high a price
- ...if you bid lower, you risk not buying at a good price
- (same reasoning as for the BDM)

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- Q: would a **first** price sealed-bid auction be different?

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- Q: would a **first** price sealed-bid auction be different?

- Q: why would you prefer auction over BDM?

Common value auctions

First price auction for an oil extraction permit

- an oil field has a capacity estimated $\sim U(0, 50)$
- we set up a **first price** auction: the higher bid will get the extraction rights

- we do this for real: 1 barrel $\Rightarrow$ 1 cent
- the oil well is worth between 0 and 50 cents
- **Now place your bids!**

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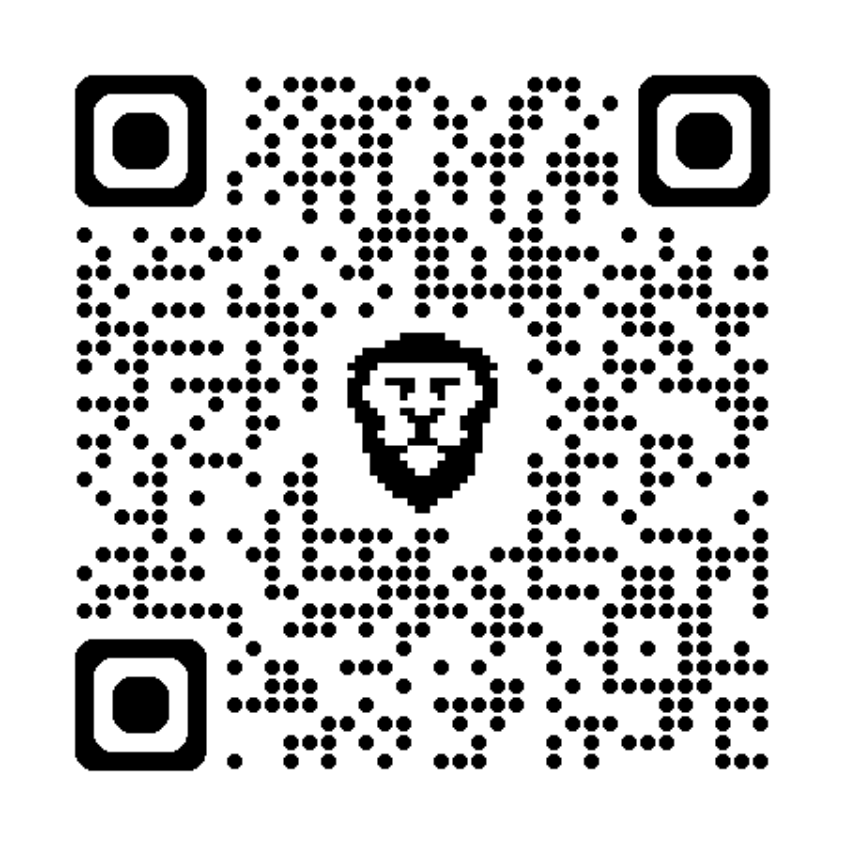

Winner's curse

- this is a first price auction with a *common* but *unknown* value
- each participant has a heterogeneous estimate of the oil yield
- the one that will win the auction is the one most likely to overestimate it
- and hence the one less likely to make profits!

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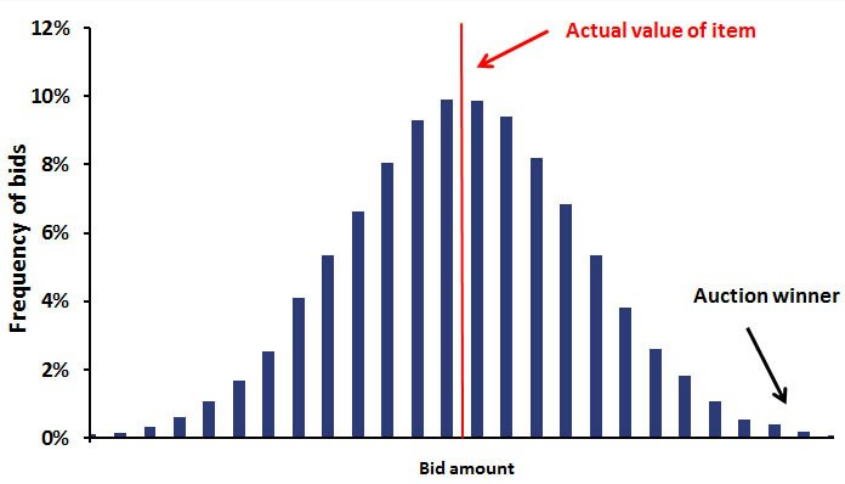

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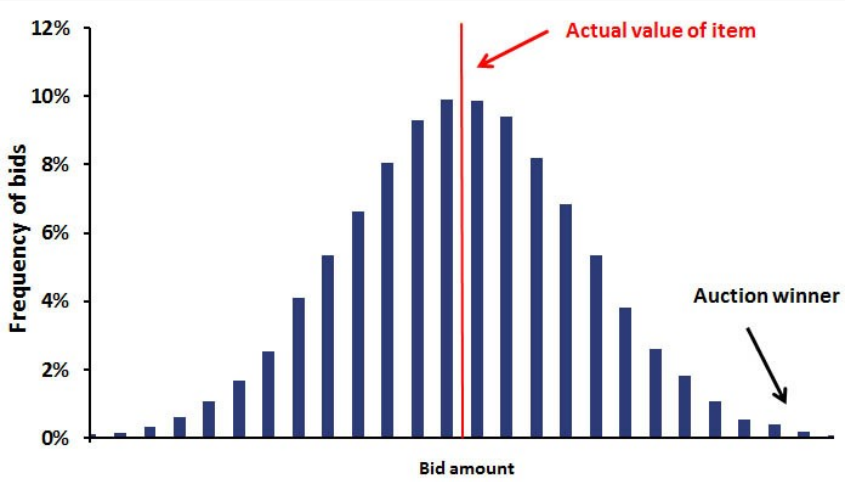

Winning an auction can ruin you!

Value as Willingness to Accept (WTA)

We can also operationalize value as willingness to accept (WTA)

- the amount of money a consumer wishes to receive to part with a good **that she has**
- Might depend on external conditions...
- ...good availability...
- ...information...
- ...existence of markets... etc.

Goods for which you might elicit WTP

- private goods (soda, cookies, electricity supplies...)
- public goods (a new park, a new social service...)

WTP, WTA

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- private goods (soda, cookies, electricity supplies...)
- public goods (a new park, a new social service...)

Goods for which you might elicit WTA

- private goods (selling your car, changing electricity provider...)
- public goods (expected environmental deterioration, a new development on an existing park...)

WTA vs. WTP

A simple experiment

- half of you receive salty crisps
- half of you receive sweet madeleines
- please indicate in a sealed bid:
  - for how much would you sell the good you own
  - for how much would you buy the good you do not own
- we will then randomly match you, and if prices match (bid$>$ask) the transaction is made
- according to the usual rules

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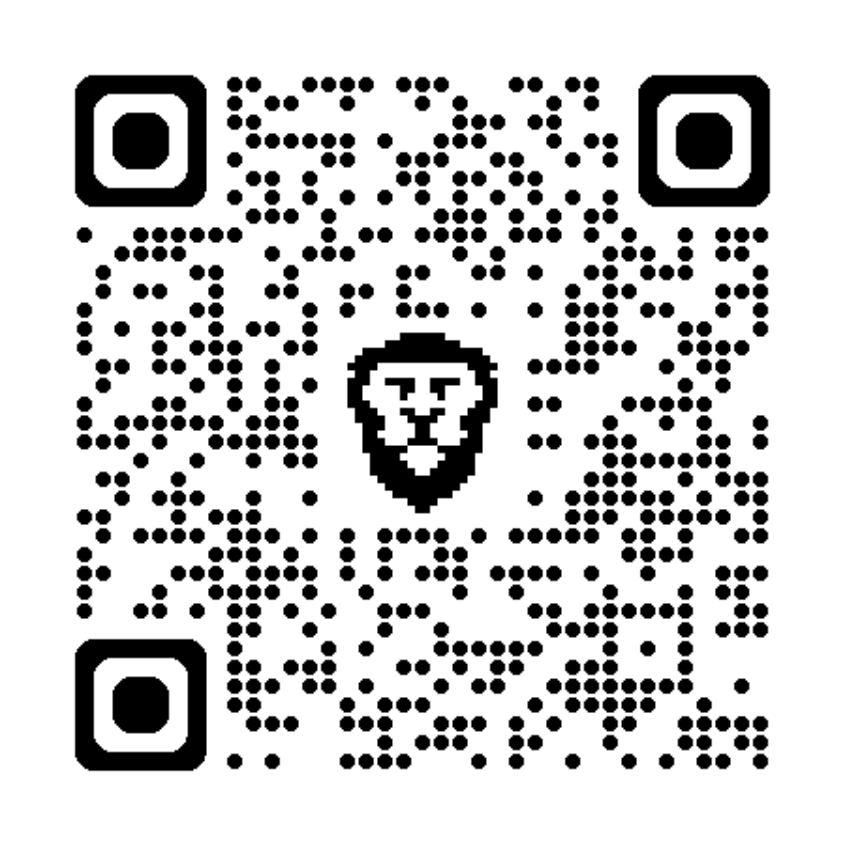


WTP vs. WTA: experiments

Students in every other seat were given university mugs. Then reported how much they would be willing to sell the mug for.

Students who did not get a mug reported the price they would be willing to pay to get one.

What happened?

a) The students with mugs priced them higher.
b) The students with no mugs priced them higher.
c) Both sets of students priced them about the same

WTP vs. WTA: experiments

Students with the mugs were willing to sell them, on average, for

$4.50

Students with no mugs were willing to buy them, on average, for

$2.25

Kahneman, D. (UC Berkley), Knetsch, J. (Simon Fraser U), Thaler, R. (Cornell), 1990, Experimental tests of the endowment effect and the Coase theorem. *Journal of Political Economy, 98*(6), 1325-1348.

WTP vs. WTA: the endowment effect

this is the Endowment effect: you value a good more because it's yours

"Have you ever noticed that their stuff is shit and your shit is stuff?"

– George Carlin, A Place for My Stuff

WTP vs. WTA: theory

In theory (on average, in large samples) $WTP = WTA$

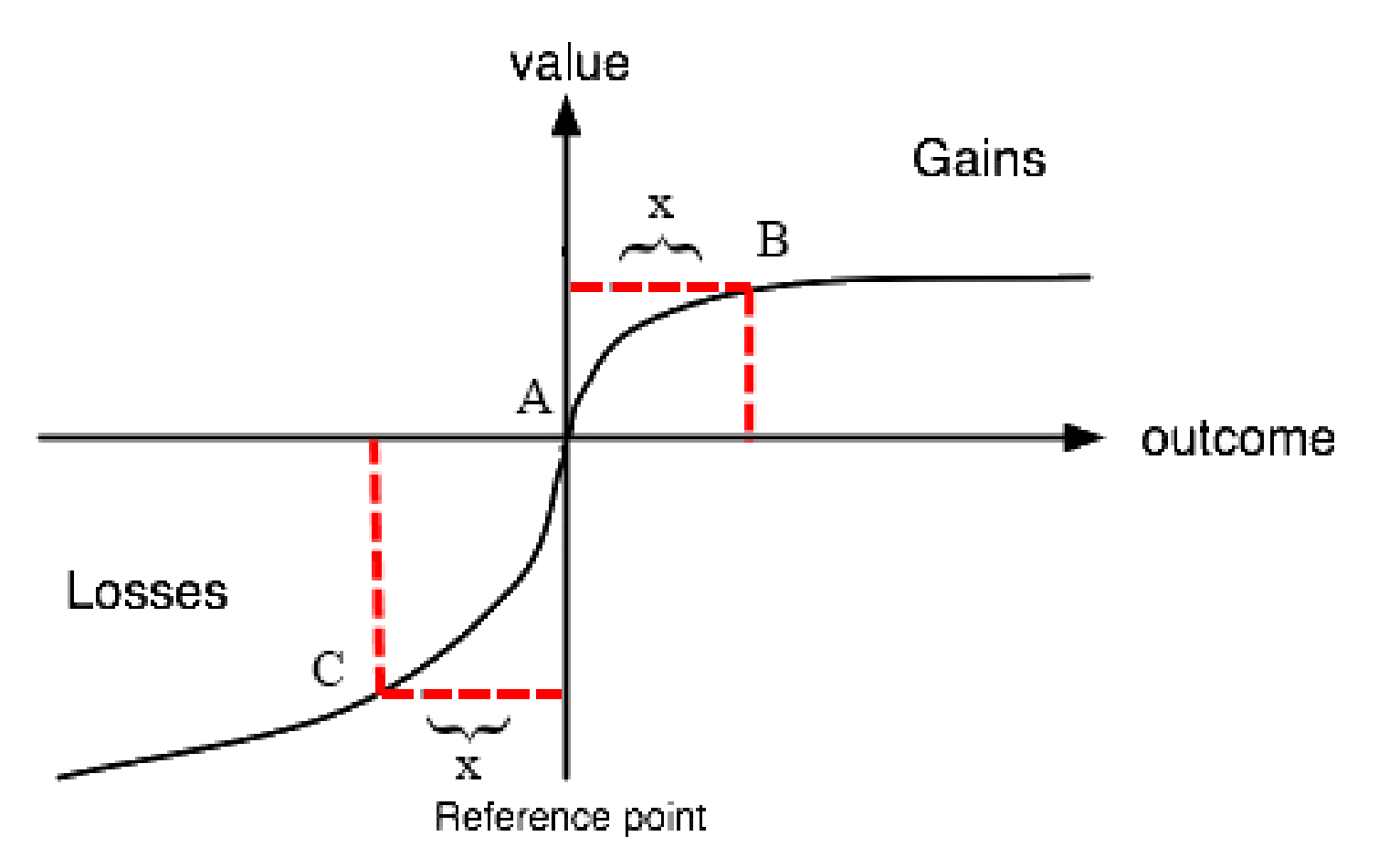
- tastes differ, so some people might prefer X to Y and others Y to X
- but not *systematically so* [here you are $\sim$16, way too small]
- if the two goods are equally desirable, we should see $\sim$ the same evaluations, and roughly an even number of transactions
- if desirability is asymmetric, we should see asymmetry in transaction, but still no systematic difference between the WTP of one group and the WTA of the other.

Why the endowment effect?

Loss aversion and reference dependence

- people feel losses more than equivalent gain
- (would accept to play a lottery in which you have 50-50 chances of losing 100 and gaining 120? and 100 and 100?)
- this is called *loss aversion*
- moreover, losses are not evaluated around zero, but around the *status quo*
- if you get a raise in your wage, you get used to it; and less money will be felt as a loss

Loss aversion and reference dependence



Mainly for this contribution Daniel Kahneman and Amos Tversky got the 2002 Nobel Prize in Economics!

More complex evaluation: a burger with fries

- we deal with a **tasty burger** with **fries side**.
- please write down somewhere your WTP for this meal now.
- no incentives this time, but let's pretend as if they were there.

Social value and social norms

Now imagine you want to elicit social norms on value

Social value and social norms

Now imagine you want to elicit social norms on value

- that is, **not** the individual value
- but the value that an individual *thinks* the *others* have
- is it possible to incentivize this?

Social norm elicitation

- we deal with a **tasty burger** with **fries side**.
- your task is to *guess* how much *the average bid* of **everyone in the room** is
- we will compute the **average** of all your guesses, and that is the target.
- the person that **gets nearest to the average** wins!

QRcode

A Beauty contest

SUNDAY MORNING, MAY 14, 1933 SAN ANTONIO EXPRESS D 9

Here Are Ten More Winners in the Court of Honor Competition

JULIA ROSE WIEDENMANN.

JANIE GRAY PAYNAN.

WANDA STAUB.

BELLE SAPER.

THOSA ELIZABETH MERCHANT.

CHRISTINE HUGHES.

VIVIAN FERGUSON.

HAZEL MAE GRENINGER.

Queen and Ladies-in-Waiting Will Be Announced at Dinner Night of May 26 When Entire Court Will Be Guests of Honor.

San Antonio Express brownie presents the second group of 10 winners in the Court of Honor Competition, the first 10 having been presented last Sunday. Another group of 10 will be shown in the Sunday Express May 21, and the final 21 winners including the queen and ladies-in-waiting will appear in San Antonio Express May 28.

President Roosevelt's announcement that he would open the Century of Progress Exposition on May 27 instead of June 1, caused a quick shuffle of plans in the tentative schedule for entertainment of the court. Arrivals of the girls who will go to Chicago from other American cities and from Europe was pushed forward one day—from May 26 to May 25.

Then passed of a leisurely preparation of their costumes over a period of four days, they will hurry through fittings and be ready on Friday, May 26, for the review by the Judges, that will place any of their number on the throne. The election of the queen will be held on May 28 instead of May 27, as originally planned.

That night, on the eve of the new election, the coronation dinner will be held with appropriate ceremony. Knowing each girl will be an honor student from Northwestern or at the University of Chicago, and feel themselves an important part of the tremendous pageant of the opening night.

At 1 o'clock in the afternoon, they will find themselves grouped for the significant ceremony, on the temporary rostrum to be built in Soldiers' Field for the presentees who will honor the city and the exposition by their presence. In the same white uniform dresses in which they paraded before the Judges the preceding evening, the girls will participate in the inaugural, as the formal pastimes are made that will show with the grounds for a full five months.

LUCILLE RADER

VIOLA DELL

THIS WEEK'S WINNERS

Janie Gray Paynam, 24 Virginia St., Dorchester, Mass.
Thora Elizabeth Merchant, 370 Funston Ave., San Francisco, Calif.
Wanda Staub, 3605 N. E. 43rd Ave., Portland, Ore.
Christine Hughes, South Conway, North Holstein, Va.
Vivian Ferguson, 1305 Cumberland, Little Rock, Ark.
Julia Rose Wiedenmann, 827 Archbald, Kansas City, Mo.
Belle Saper, 1352 S. Avers Ave., Chicago, Ill.
Hazel Mae Greninger, 349 N. Felton St., Philadelphia, Pa.
Lucille Rader, Dover, Ky.
Viola Dell, 3346 Carroll Ave., Chicago, Ill.

Beauty contest: why and optimal strategy

- beauty contest allows subjects to express beliefs over other subjects
- i.e. a proxy of the *social norm* (what I think others usually do $\sim$ what I think ought to be done)
- the optimal strategy is to state one's true belief (see auctions or BDM)
- BC allow to assess public awareness and awareness of public awareness about a topic


KEEP
CALM
it's
QUESTION
TIME