Unlocking the Potential of Probability Panels in Research: Assessing Current Advantages and Challenges, Shaping the Path Ahead

### Michael Link, Ph.D.

Chief Research Officer Ipsos Public Affairs, US

Michael.Link@Ipsos.com

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The Old Saying: Good, Fast, or Cheap: Pick Any Two!





### Research Is Actually An Optimization Game

Goal today is to explore how these concepts apply to Probability Panels but also how these the utility of these panels is evolving over time ...

### Probability Panels are Mainstream Methods, but Rare Commodity



- Methodology involves ongoing sampling & recruitment of individuals, who provide profile data on key characteristics & agree to take additional surveys over time on a variety of topics
- A probability-based selection process used at (a) initial recruitment & (b) selection of sample for each individual survey
- Samples may be general population; oversamples of specific demographics; and/or focus on individuals with specific demographic, attitudinal, or behavioral attributes (ex., Veterans who saw active duty - Gulf War to present who use VA services)
- Also facilitates:
  - ✓ Longitudinal research, following individuals across times (ex., changes in health after exposure to COVID 19)
  - Base for more complex data collection designs (ex. Probability panel + fresh Address-based sample recruits)
  - ✓ Innovation Hubs testing new ideas, approaches

Ipsos KnowledgePanel<sup>®</sup> is used for research & evaluation by top organizations across all major sectors



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### **Ipsos KnowledgePanel: Transparency in Method is a Must**



- Transparency in method is as important for probability-panels as for any other survey effort
  - ✓ Ipsos is a Charter Member of the AAPOR Transparency Initiative
- Many of the methods used in panels are identical to those used in standalone surveys
  - ✓ Ipsos KP uses Address-based Sampling (ABS) mail with multi-mode response (mail, phone, web) for the initial stage of recruitment
- Unlike standalone surveys, panels do require "maintenance" in terms of both (a) ongoing recruitment to replace those who attrit or to bolster the panel in terms of number of individuals with certain attributes and (b) keeping current panelists engaged and interested in the process
- Those without internet can call in or answer by mail to express interest in joining and are then
  provided with both a tablet and a mobile data plan to ensure they can access & participate in
  surveys this is a critical group for many clients as they tend to be the most societally marginalized
  or isolated

### **Ipsos Knowledge Panel: Key Metrics**



- Current "Active Panel" (participated at least once in past 2 months) size: 61,310 adults
- KnowledgePanel typically conducts:
  - $\checkmark$  ~14 recruitment waves across the year with average response rate of ~10%
  - ✓ ~450 surveys across 300 clients per year with an average survey response rate of 60%
  - ✓ Average attrition rate of 2.5% per month





Deeper Dive into How Panels are Optimizing these Key Factors & Innovating

### **Speed – Getting Results in a Timely Manner**



What does "Speed" mean in research ...

- … first call to panel vendor?
- ... design and field prep time?
- ... moment the study fields to the time results are delivered?

#### Probability panels have the advantage of having:

- Respondents "pre-recruited";
- Agreed to take surveys;
- Wealth of background data already collected

### Speed: What's "Typical" and what's "Fast"?



#### **Typical Panel Timeline (4 Weeks)**

Starting with receipt of a final questionnaire with average length of 20 questions:

- 1 week to program and test questionnaire & invites
- 2 week field period with series of reminders
- 1 week for data processing and weighting



#### Fast Turnaround Timeline (26 hrs)

Starting with receipt of a final questionnaire – typically no more than 5 questions:

- Receive questionnaire at 10am
- Field by noon
- Data & weights delivered by 2pm following day



### **Monitoring & Improving Speed**



- "Speed" can have potential drawbacks:
  - ✓ Panel conditioning: respondents who participate in multiple surveys within the same panel may start to exhibit changes in their responses over time due to their repeated exposure to the survey process.
    - Assessments of KP show little evidence of panel conditioning
  - ✓ Speeders: respondents who complete surveys at an unusually fast pace may tend to rush through the survey without carefully reading the questions or considering their responses.
    - In KP has rules to QC for speeding and assess if data need to be discarded
    - Research on KP shows that eliminating speeders has very little impact on final estimates

#### • Continual Improvement on "Speed"

- ✓ Automating manual systems or approaches requiring manual handoffs
- ✓ Reduce front-end and back-end time requires to set up and report out data

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# Cost – Drives Design & What's Feasible

#### So What Does it Cost?

Well, that depends 🙂 ...

- ... few questions on an omnibus?
- ... set of questions for a specialized population?
- ... custom or more complex panel design?

- Like any research project design and researcher needs drive costs
- Probability panels:
  - Cost a less than standalone survey designs but more than simple "Opt-in" panels (difference is quality)
  - Advantage of scale and volume effectively researchers are "sharing" respondents across studies
  - Different ways to access a panel:
    - ✓ Few questions on an Omnibus
    - ✓ Standalone panel survey
    - Customized design (ex. Stand alone survey with follow-up to capture biospecimens)



### **Continually Assessing Approaches to Reduce Costs**



- Continuous improvement process Always assessing what works and what doesn't to obtain data to meet the quality researchers require?
  - ✓ Question the "We've always done it this way" processes;
  - ✓ What methods can obtain similar enrollment or response rates which can be done at a lower cost (ex. Envelop size with postage implications)
  - ✓ Can we automate areas to reduce required labor hours
- Focus on Recruitment Phase:
  - ✓ Investigating & testing the best methods / appeals / incentives for encouraging the harder to cooperate groups balancing tailoring, effectiveness and cost efficiency
  - ✓ Building out the panel so it ensured "depth" in these hard-to-cooperate demographics rather than simply pushing overall "Panel Size"

#### **Focus on Retention Phase:**

- Different groups are motivated to stay in a panel for different reasons understanding those reasons & turning them into actions / processes / tested methods
- ✓ A less researched area in our industry

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### **Quality – Not Left to the Eye of the Beholder**

- Rigor and Methodological Integrity:
  - ✓ Utilizing sound and appropriate methodologies that are conducted correctly and ethically.
  - ✓ This includes proper data collection, accurate analysis, and unbiased interpretation of results.
- Validity and Reliability of Findings:
  - The findings should be valid (i.e., accurately measure what they claim to measure) and reliable (i.e., consistent and reproducible).
- Transparency and Replicability:
  - The methods and procedures used in the research should be clearly documented so that other researchers could replicate the study.

Quality in Probability Panels = Quality in Social Science Research: The adherence to rigorous, ethical standards & methodologies that yield valid, reliable, and relevant findings.





### Like Any Survey Endeavour – Accuracy is Critical



#### **Case-in-Point:**

During Spring 2021, as the United States rolled out its COVID-19 vaccination program, the Axios-Ipsos Coronavirus Index, fielded on the KnowledgePanel, tracked vaccination rates.

 KnowledgePanel survey estimates were within one percentage point of the official CDC data -- recognized by multiple external experts for its exceptional accuracy.

#### Axios-Ipsos Coronavirus Index survey vaccination rate vs. Centers for Disease Control administrative data





## Assessing Quality: Benchmarking KnowledgePanel on Variety of Survey Topics



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- How do results from KnowledgePanel compare to those from other recognized "gold standard" benchmarks?
- Approach:
  - If estimates from Profile data were available, we used them – 29 estimates
  - For those not available from Profile Data we conducted a study – 22 estimates
- Drew sample of 5,997 current KP panelists (as of April 2023)
- Sample was selected using our standard probability proportional to size (PPS) sampling methodology where the MOS weight is a panel weight that aligns total panel with Census benchmarks.



## Quality: Approach to Assessing How KP Compares to "Gold Standard" Benchmarks

- Identified 51 items across 7 key topic areas
- As per normal protocol, KP panelists received an email with a link to the online survey (online mode only used to control for potential mode effects)
- Field period: 4/7/23 4/18/23
- Complete: 3,699 (61.7% completion rate)
- Data are weighted by age by gender, race/ ethnicity, income, education, Census region by metropolitan status, and primary language with a design effect = 1.1

Benchmark source	
shown in the	
table	Year and survey name
ACS	2021 ACS
CPS	Mar 2022 Annual Social
	and Economic (ASEC)
	Supplement
	Nov 2020 Voting and
	Registration Supplement
	Aug 2022 Veteran
	supplement
	Nov 2021 CPS compute and
	internet supplement
	Sep 2021 Volunteering and
	Civic Life Supplement
NHIS	2021 NHIS
NSDUH	2021 NSDUH
GSS	2021 GSS
	Oct 2022 Gallup website
	(Gallup Trends on U.S. Gun
Gallup	Ownership)

### **Results: Weighted Differences KP to Benchmarks by Topic**



	# Comparison	Average of Absolute	Min of Absolute	Max of Absolute
Topic Areas	Items	Difference	Difference	Difference
Health	12	2.08	0.15	4.69
Secondary Demographics	10	2.17	0.00	4.90
Transportation	2	2.25	0.07	4.43
Civic Engagement/Participation	8	2.86	0.17	8.40
Attitudes	6	3.55	0.54	6.56
Technology	8	4.38	0.06	13.55
Politics	5	7.90	1.76	16.87
Grand Total	51	3.33	0.00	16.87

#### **Key Findings:**

With the exception of questions about politics, average agreement with benchmark was <+/-5% for all other topics

KP data are weighted by age by gender, race/ethnicity, income, education, Census region by metropolitan status, and primary language with a design effect = 1.1

#### **Results: Weighted Differences KP to Benchmarks by "Gold Standard" Estimates**



Benchmark Studies	# Comparison Items	Average of Absolute Difference	Min of Absolute Difference	Max of Absolute Difference
ACS	9	1.57	0.00	4.43
NHIS	8	2.64	0.15	4.66
GSS	6	3.55	0.54	6.56
CPS	26	3.99	0.00	16.87
NSDUH	1	4.69	4.69	4.69
Gallup	1	4.90	4.90	4.90
Grand Total	51	3.33	0.00	16.87

#### **Key Findings:**

While specific items may have larger differences, average difference for all benchmark studies was <+/-4% for those with more than one comparison question

KP data are weighted by age by gender, race/ethnicity, income, education, Census region by metropolitan status, and primary language with a design effect = 1.1



### Weighted Differences KP to Benchmarks by Question

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### **Potential Causes of Deviations**



#### I. Standard Survey Issues:

- Differences in survey mode
- Self administration vs. interviewer administration
- Question order / context
- Timing of when questions were asked (date)
- Differences in sample design
- Weighting variables and approach

#### II. Differences Due to Panel Design or Approach:

- Nonresponse or underrepresentation of particular groups in panel join rate (ex., higher nonresponse among "non-voters" / "socially disengaged" affecting responses to political questions)
- Differential attrition leading to underrepresentation of particular groups



### Key Takeaways

#### I. Overall the KnowledgePanel replicated to a high degree more than 80% of the benchmark questions

- Overall bias is very small absolute average difference from benchmark is 3.3 percentage points
- Data collected in quick & cost-effective manner
- Questions with highest levels of agreement: health (2.1% pt diff), secondary demographics (2.2% pt diff), and transportation (2.2% pt diff)
- II. Topics with the broader deviations from benchmarks: technology (avg. abs diff 4.4% pt) & politics (7.9% pt), but a wide range within those topics w/ some items aligning well with benchmarks
- Nonresponse among key groups which needs to be addressed looking into both recruitment and retention
- Experimenting with uses of voter registration files and data as well as exploring non-political variables to identify these "attitudinal" groups and adjust via sampling, appeals, communication protocols & weighting

### **Quality: Continuous Improvement Efforts**



- Tailored recruitment
  - Program of continual learning & testing (internal & lessons learned from other researchers)
  - Key focus is on recruitment and retention of hardest-to-cooperate groups:
    - ✓ Teens and younger adults
    - ✓ African Americans males especially
    - ✓ Spanish language dominant homes
    - ✓ "Non-participators"
- Use of External Data (e.g., voter records, detailed geographic info etc.) for targeted:
  - Sampling at recruitment stage
  - Tailoring materials, appeals & incentives
  - Sampling at survey stage
  - Potential new weighting variables
- Automating and dashboarding series of QC metrics to drive quicker recognition of issues and action
  - Automating many of the reports which historically had been manual or spreadsheet-based
  - Facilitate quicker identification of issues and swifter resolution



### Probability Panel Next Steps: Continuous Evolution

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### **#1. Probability Panels as Innovation Hubs**



Probability panels can serve as more than survey platforms – means of generating and testing new ideas, methods & approaches – large and small

- Large, diverse population readily at hand
- Robust technology infrastructure already built out
- Ability to augment with variety of commercial and open data sources
- Collect data beyond surveys (GPS, Biospecimen, passive data, etc.)

Facilitates "micro-level" testing such as question wording / format through "macrolevel" testing such as will respondents actively collect and report other types of information – food consumption; pictures of their environment, download passive metering technology

### **#2** Part of More Complex Designs



- Some projects may require augmenting the probability sample with newly recruited respondents need for additional respondents in some of the harder-to-cooperate demographics
  - ✓ Facilities more comprehensive analyses by capturing broader perspectives.
- Can augment with:
  - ✓ Additional probability-based recruitment (ex. ABS with a push to web mode)
  - ✓ Opt-in samples can be used for lower cost augmentation
- Continually refining statistical techniques used in these studies, such as calibration or weighting methods to help address the challenges associated with combining samples.
- Caution with Opt-in:
  - ✓ Not all opt-in samples are the same wide range in terms of quality
  - Studies showing that "river samples" tend to be the worst forms and subject to an array of issues (fraud, bots, "professional respondents")
  - ✓ If using Opt-in, vet the sample provider and their recruitment and retention methods carefully

### **#3. Integration of Passive Data Collection:**

- Areas in use or under research:
  - **GPS Tracking:** Using GPS-enabled devices to passively track individuals' locations and movements (ex. commuting behaviors or geographical preferences)
  - Wearable Devices: Collecting data from wearable devices like fitness trackers, smartwatches, or biometric sensors (ex. physical activity levels, heart rate, sleep patterns, and other health-related metrics)
  - Environmental Sensors: Installing sensors to monitor various environmental factors, such as air quality, temperature, humidity, or noise levels (ex. understand the impact of the environment on individuals' well-being or behaviors)
  - Smart Homes: Gathering data through home automation systems or Internet of Things (IoT) devices that monitor energy consumption, appliance usage, or other household activities (ex. insights into energy usage patterns, lifestyle habits, or efficiency measures)
  - Mobile Apps and Usage Data: Collecting data from smartphone applications that passively track usage behavior, screen time, app preferences, or location-based information (ex. insights into daily routines, technology usage patterns, or mobility behavior.
- Example: "Digital KnowledgePanel" is a subset of respondent who agreed to download an app and have their online / smartphone usage tracked
  - Provides insights into user behaviors with technology generally
  - Can see what specific types of content (news, social media sites, etc.) individuals are using



### **#4. Leveraging Big Data and Data Linkages:**



- Forms of Data Which Can be Linked to Probability Panel Data typically requiring authorization or additional information from the panelist:
  - Social Media Data: Twitter, Facebook, or Instagram usage usage, user-generated content, sentiment analysis, and patterns of communication.
  - ✓ Web Analytics Data: generated from website analytics, such as page views, clickstream data, or user behavior on surveys conducted online.
  - Transactional Data: retail sales report, financial transactions, or customer purchase history, can be combined with survey data to gain a deeper understanding of consumer behavior, preferences, or market trends.
  - Administrative Data: Incorporating administrative data from government databases, organizational records, or other official sources can enrich survey findings.



## Conclusion

• Probability-based panels may be few, but are powerful vehicles for research, evaluation & insights affording advantages of cost, speed, & quality

• Increasingly serving as well as Innovation Hubs and the Basis of more Complex Designs



### Thank you!

Michael W. Link, Ph.D.

Michael.Link@Ipsos.com



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## Appendix

### **Basic Ongoing Cycles within Ipsos KnowledgePanel**



Item	Торіс	Benchmark	Benchmark Est.	KP Est.	Difference
How long in current home	Secondary Demos	ACS	12.1	10.2	-1.9
Spending alternative energy sources	Attitudes	GSS	34.7	33.8	-0.9
Depression	Health	NHIS	17.3	16.5	-0.8
Use desktop /laptop	Technology	ACS	84.0	83.3	-0.6
Frequency of time w friends/family	Civic Engagement	CPS	52.0 3.6	51.6 3.4	-0.4
Deaf or difficulty hearing	Health	CPS	8.4	8.2	-0.2
Attend public meeting past 12 mo	Civic Engagement	CPS	33.4	33.3	-0.2
Ever smoker	Health	NHIS	69.1	69.1	-0.2
Homeownership	Secondary Demos	CPS	3.0	3.0	0.0
Number of bedrooms	Secondary Demos	ACS	6.0	6.0	0.0
Number of rooms	Secondary Demos	ACS	65.4	65.5	0.0
Use internet for video or voice calls/conf.	Technology	CPS	23.8	23.9	0.1
Number of vehicles	Transportation	ACS	0.1	0.4	0.1
Member of the Reserve or National Guard	Civic Engagement	CPS	44.4	45.0	0.2
Spending on national defense	Attitudes	GSS	28.7	29.5	0.5
Use internet for telecommuting/wfh	Technology	CPS	6.8	7.7	0.8
Difficult walking or climbing stairs	Health	CPS	90.4	91.6	0.9
Has health insurance coverage	Health	ACS	1.8	3.4	1.3
Blind or vision impairment	Health	CPS	6.6	8.2	1.5
Ever active duty	Civic Engagement	CPS	9.7	11.4	1.6
Donate to political organization/campaign	Civic Engagement	CPS	11.4	13.2	1.8
Medicare Part D Plan	Health	NHIS	49.2	51.1	1.8
Donate to charity	Civic Engagement	CPS			1.9



### Specific Questions Within +/-2% of Benchmark

KP data are weighted by age by gender, race/ ethnicity, income, education, Census region by metropolitan status, and primary language with a design effect = 1.1

### **Specific Questions Deviating from Benchmark by** +/-5%



Item	Торіс	Benchmark Source	Benchmark Estimate	KP Estimate	Difference
Read/watch/listen to news about politics, societal, local issues (% Basically every day)	Civic Engagement / Participation	CPS	48.5	40.1	-8.4
Discuss politics w friends/family (% Basically every day)	Civic Engagement / Participation	CPS	13.8	8.7	-5.1
Freq of attending religious services (% Never)	Attitudes	GSS	30.7	36.3	5.6
Spending supporting other countries (% About Right)	Attitudes	GSS	29.2	35.8	6.6
Spend time volunteering past 12 mo. (% Yes)	Civic Engagement / Participation	CPS	21.1	28.2	7.1
Use internet to play video games (% Yes)	Technology	CPS	41.6	52.0	10.4
Voted in 2020 (% Yes)	Politics	CPS	61.3	73.7	12.4
Wearable device such as smart watch (Different wording of question)	Technology	CPS	18.8	32.3	13.6
Voter registration (CPS: registered in 2020; KP: currently reg.)	Politics	CPS	66.7	83.6	16.9

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KP data are weighted by age by gender, race/ethnicity, income, education, Census region by metropolitan status, and primary language with a design effect = 1.1