Wharton Behavioral Laboratory[1]
Annual Report Summary for Calendar Years 2017

Mission and Strategic Goals

The WBL is a shared asset for all Wharton faculty and students. It provides a variety of services that support data collection for behavioral research on business-related topics. The primary goal is to enhance the research productivity of Wharton faculty by minimizing the operational costs, both time and money, of conducting research. The primary services provided are maintaining and updating (1) data collection facilities and equipment, (2) substantial participant pools (including a panel of 4,000+ students and other members of the Penn community and a wide variety of commercially provided online panels), and (3) efficient staffing for conducting state-of-the-art experimental research. The WBL should contribute to Wharton's reputation for excellence in academic research and enhance our ability to attract and retain the very best scholars.

History and Background Information

The Wharton Behavioral Laboratory (WBL) in its current form began in Spring 2005. The initial proposal estimated that the research volume would range between 5,000 and 14,000 participant-hours annually (with the lower number being the 2005 volume). In the first year, actual volume exceeded those estimates and a SHDH location was added to the JMHH location. This immediate high volume was interpreted as evidence that the WBL addressed a major deficiency in research support that had slowed the rate of research productivity and/or reduced the sample sizes used in behavioral research projects. In 2017, the on-campus volume was approximately 24,000 participant-hours and online volume was over 280,000 completed surveys/experiments. This growth since 2005 has resulted from increased numbers of faculty doing behavioral research and increased volume per researcher. The most active academic departments are Marketing, Operations/Information/Decisions, Management, and Business Economics/Public Policy; however, faculty from Finance, Healthcare Management, and Legal Studies and Ethics have also used WBL services. In general, all indications are that demand for data collection by the WBL is likely to continue to grow for the foreseeable future.

The operating procedures of the WBL differ from those of most behavioral labs insofar as it pools resources across all Wharton behavioral researchers. WBL staff in each physical location run several distinct research projects simultaneously for several consecutive days (called a "session," which typically consist of 20 one-hour time slots with 14-20 participants scheduled for each slot, but might also be four 50-person time slots in a single day in a large computer lab). Each session provides a sample size of 150-200 participants for 1 to 4 distinct research projects. This "factory-like" design allows the WBL to achieve high levels of efficiency and quick turnaround times, and it contrasts with the traditional model for behavioral research, in which

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[1] Prepared by Professor Wes Hutchinson (Faculty Director), SaraRose Christodoulou (Senior Research Coordinator for the On-Campus Panel), Kate Kelley, (Senior Research Coordinator for Specialized Samples), and Robert Botto (Senior IT Project Leader). The 2017 members of the faculty advisor board were Sigal Barsade (MGMT), Judd Kessler (BEPP), Bob Meyer (MKTG), Michael Platt (WiN) and Maurice Schweitzer (OPIM).

individual researchers run separate labs or share facilities and scheduling, but collect data with their own students and staff (see Exhibit 7).

2017 Summary

Table 1 summarizes the key user, cost, and productivity metrics since 2006. It is clear that the use of WBL services has continued to grow in 2017. The number of users increased from 100 to 119. Importantly, the number of Wharton standing faculty users increased to 39, compared to 35 in 2016.

Table 1. Productivity and Cost Analysis 2006 -2017

CY	2017	2016	2015	2014	2013	2012	2011	2010	2006-09 (avg.)
Wharton Standing Faculty Users	39	35	38	37	32	31	27	24	22
Wharton Visitors/ Post-doc Users	12	4	4	4	8	9	2	5	3.8
Other Faculty/ Post-doc Users	25	18	16	7	9	15	9	3	4.0
Student Users	43	43	38	29	30	35	27	24	22.0
Published Articles[2]	17/30	26	21	31	23	23	14	14	9.50
Working Papers	67	67	67	65	78	45	45	38	31.3
New Projects	63	49	80	51	53	40	40	13	27.3
On-Campus Subject-Sessions	23,499	24,675	23,387	22,358	22,735	21,940	21,532	17,756	15,647
Specialized Sample Subject-Sessions	357,094	288,004	270,230	266,404	133,157	47,102	7,260	5,468	1,900
Cost per Adjusted Subject-Sessions[3]	$12.68	$12.81	$14.02	$11.60	$18.29	$25.01	$28.74	$33.12	$29.89
Articles per $100K[4]	1.4	2.5	1.9	3.5	2.5	2.9	2.1	2.2	2.0

Overall, the trends are good and exhibit slow, but steady, growth over the past 3 or 4 years. The fully loaded cost per subject-session-equivalent has decreased dramatically since 2012 (mainly due to the large increase in studies using online samples provided by Amazon.com's Mechanical Turk labor pool) and decreased slightly in 2017 compared to 2106. Also, the count of published-articles-per-$100K looks good compared to benchmarks like NSF and NIH grants. It dipped slightly in 2017, but should rebound in 2018 given the large number of articles already in January - April of 2018.   Finally, the on-campus labs had a volume of

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[2] 17 articles were published in 2017, and there were 30 articles that were accepted or published by June, 2017. Only the 17 articles published in 2017 were used for computing "Articles per $100K" for 2017.

[3] Specialized samples are adjusted to be 1/3 of an On-Campus Subject-Session because they are mainly brief online surveys (10 - 20 minutes).

[4] Published benchmarks for articles per $100K range from .6 to 5 (e.g., .9 for NSF grants, 1.5 to 3.2 for NIH grants, and .6 for all US Higher Education Research and Development). Note that in contrast to previous years, these numbers are considerably less inflated, if a all, because they now reflect the funding for participant costs provided by researchers, departments, and internal and external grants.

23,499 participant-hours (24,675 in 2016), and specialized samples had a volume of 357,094 participant-surveys (288,004 in 2016). See Exhibits 4 & 5 for details.

Table 2 summarizes usage of WBL services by user type and department. The greatest usage of WBL services in 2017 were by Marketing (32% of total users, 31% of expenditures) and Operations, Information, and Decisions (22% and 46%), followed by Management (14% and 17%). See Exhibit 3 for details.

Table 2. Usage of WBL Services

	% Expenditures	Expenditure per User	% Total Users
Wharton Faculty	90%	$14,644.31	33%
Wharton Visiting Faculty & Post-docs	1%	$505.98	10%
Other Faculty	2%	$604.37	21%
Student	7%	$960.53	36%
BEPP	2%	$1,717.33	5%
LGST	0%	$681.68	3%
MGMT	17%	$6,476.19	14%
MKTG	32%	$5,395.67	31%
OID	46%	$11,185.42	22%
Penn	3%	$941.23	18%
Other	0%	$0.00	7%

NOTE: Expenditures are based on 100% of participant incentive cost and reflect both on-campus and specialized samples; less than 70% of these costs come from the WBL budget and operational costs are not included. Wharton faculty members sponsor almost all research done by doctoral students.

Goals for 2018

1. Increase the current high levels of productivity and efficiency in the on-campus labs and in specialized samples.

2. Obtain new sources of external financial support for the WBL.

3. Development and implementation of infrastructure software for quality control, a participant characteristics database, and accounting.

4. Continue and increase IT and RA support of eye-tracking equipment, physiological equipment, EEG, and emotion coding software as easily used research tools. Complete the cross-validation study begun in 2017.

5. Increase the number of Wharton faculty and graduate students using the WBL.

6. Work closely with the Wharton Neuroscience Initiative (WiN) to provide efficient, high quality behavioral data that serves as "proof of concept" for more expensive neuroscience paradigms (such as fMRI). Continue collaboration in developing best practices for neurophysiological data collected by both WBL and WiN labs.