

Report of the APA Study Panel on Workforce Analysis in Psychology January 2006

Adopted by APA Council of Representatives in August 2006

No method nor discipline can supersede the necessity of being forever on the alert. What is a course of history, or philosophy, or poetry, no matter how well selected, or the best society, or the most admirable routine of life, compared with the discipline of looking always at what is to be seen? Will you be a reader, a student merely, or a seer?

Henry David Thoreau, Walden "Sounds"

Preface

In February 2005, the American Psychological Association (APA) Board of Directors authorized the appointment of a study panel to develop an action plan for workforce analysis in psychology.¹ The panel was funded for one meeting, held on November 11-13, 2005. Meeting participants are listed in Exhibit 1.

This report summarizes the deliberations of the study panel in the form of a recommended action plan and rationale for the same.

Recommended Action Plan

The APA Study Panel on Workforce Analysis in Psychology strongly recommends that the American Psychological Association (APA) be the national leader in developing for the discipline of psychology an ongoing capability to routinely conduct workforce analysis and research that will inform both: a) the long-term and strategic planning goals of the Association and psychology; and, b) the decision-making of educators, practitioners, students, and public policy makers.

This capability is essential in order for the APA to fulfill its mission in meeting the health, education, and human welfare needs of society via an accurate knowledge of workforce needs and opportunities for psychologists in all its areas of science, practice, and education.

¹ Appointments to the study panel were made by the APA President, Ronald F. Levant, EdD from nominations made by the Board of Educational Affairs (BEA), the Board of Scientific Affairs (BSA), the Board of Professional Affairs (BPA), the Board for Advancement of Psychology in the Public Interest (BAPPI), and the Committee for the Advancement of Professional Practice (CAPP). Two additional appointments were made of psychologists with particular expertise in workforce analysis research, nominated by the APA Research Office. The study panel was chaired by a member of the Board of Directors, Ronald H. Rozensky, PhD, who also invited representation of the Policy and Planning Board (P&P).

In support of this recommendation, two related actions are proposed:

A. That the APA adopt the following statement as policy:

To achieve its mission in advancing psychology as a science and a profession, and as a means of promoting health, education, and human welfare, the APA is committed to the development and maintenance of an ongoing workforce analysis and research capability to assess relationships among the supply, demand, and need for psychologists in society.

B. That the APA implements this policy as follows:

The APA will establish and fund the Center for Psychology Workforce Analysis and Research to ensure an institutionally viable and ongoing capability to assess and monitor psychology workforce needs, demands, supply, distribution, and professional functions across all domains of work in which psychologists engage.

Benefits of such a data-based capability include the ability of the APA to:

- Provide public information about education and careers in psychology in the context of employment settings, opportunities, and developments in the discipline and profession.
- Inform public policy and its decision-makers on matters related to funding for education and training, for the advancement of science, and for the support of public practice in psychology.
- Support APA efforts to increase human diversity in all aspects of the psychology pipeline and workforce in the context of demographic changes in society.
- Provide longitudinal and cross-sectional databases on psychologist activities, salaries, career paths, etc. for use by the APA in strategic planning, membership services, and its public information functions.
- Collect data in an independent manner rather than relying heavily on external sources for information that either do not concentrate on issues germane to the psychology workforce or have incomplete data that make psychology's analyses of its workforce less than accurate.
- Join the other health and scientific professions who utilize a formal and funded workforce analysis function within their own associations to inform their fields and the public in the matters described above and, as a result, have robust data that are used to seek funding to support training, practice, science, and the public interest.
- Respond in a meaningful and timely way to inquiries of federal and state governments,

and their agencies, about workforce needs, capabilities, and projections related to public funding in support of professional education and training, psychological services, and psychological science.

Rationale for the Recommended Action Plan

The *current recommendations* are based on the work of the 2005 Study Panel on Workforce Analysis, but *are consistent with a series of recommendations from other work groups, task forces, and conferences over the past decade*, members of which also reviewed the importance of workforce analysis for the future of psychology and the APA.

In the Executive Summary of its Final Report, the [APA Task Force on Workforce Analysis](#) (American Psychological Association, 2004, pp. 3-4) noted the following:

“The task force concluded that a capability to properly conduct workforce analyses in our discipline is essential if psychology is to remain a major participant with other scientific disciplines and professions that are recognized as essential to our nation’s needs in health care, education, science, industry, social services, and government, including the military. It likewise concluded that for appropriate workforce analyses to be conducted presently:

- There are too many gaps in the data currently available from within and outside the APA related to student enrollment and employment outcomes in psychology;
- There is lack of coherence and scope of information on psychology in national databases outside the APA; and,
- There is need for more information than that collected through the periodic, regularly planned APA survey research on education and employment.

The lack of such information has a potentially negative impact on psychology in terms of its attractiveness as a discipline to future generations of students, its recognition and funding as a result of public policy and legislation, and its viability as a career for those already in the discipline’s education and training pipeline.”

This analysis led the task force to recommend that “the APA, in weighing the merits of different venues for conducting (workforce) studies, consider the importance of maintaining an ongoing capability in workforce analysis studies” (American Psychological Association, 2004, p.3). This proposal reiterated a recommendation made a few years earlier about the vital importance of APA human resources research. That recommendation was made by a team of consultants who were charged by the APA Board of Directors with assessing the APA research capabilities relative to the Association’s needs and priorities (Pion, *et al*, 1999).

Two years prior to that report, based on a Council of Representatives Resolution on Training Issues in the Emerging Workplace and Marketplace, an APA task force (Hersch *et al*, 1997)

recommended that the APA develop the capability to: (a) collect, analyze, and disseminate timely and relevant data that include both the demand side in the marketplace as well as the supply side for training in psychology; and (b) monitor, maintain, and improve information on the workplace/marketplace for psychologists. Similar recommendations resulted from a National Working Conference on Supply and Demand, convened by the Association of Psychology Postdoctoral and Internship Centers (APPIC) with APA co-sponsorship (Pederson *et al*, 1998). Among the needs identified in that conference were: (a) a systematic research database and public information capability related to trends in education, training, employment, and careers; and, (b) workforce policy models and guidelines related to professional supply and demand issues.

The preceding capabilities are especially important for the discipline of psychology, given the diversity of its sub-fields and the corresponding diversity of its education and training pipelines, the complexity of its employment outcomes and career patterns, and the implications of these qualities for systematic workforce analysis and research.

In this context, it seems neither reasonable nor economically feasible to assume that a single workforce study, conducted only periodically, would suffice for the breadth of the scientific discipline and profession of psychology. Moreover, no single database or combination of national databases external to the APA is capable of answering all questions vital to workforce analysis in psychology. Drs. Kathleen Barker and Jessica Kohout reviewed all external databases and provided the members of the Study Panel with a complete analysis of their value and limitations for workforce analyses in psychology. Each of the databases provides relevant information to the enumeration of psychologists in the United States; however, there are notable limitations related to their compatibility and ultimate utility for psychology. Concerns include how psychologists are defined, work settings of psychologists, and the integration of the databases with APA databases. Exhibit 2 summarizes the limitations of several of the external national databases. While individually or in the aggregate these external databases may augment our capabilities, they are not sufficient for the types of workforce analyses needed by the APA. The discipline of psychology must have the capability to develop relational databases of its own for multiple workforce studies over time that are sensitive to, as well as coordinated and informed by, needs of our scientific discipline and profession.

The development of relational databases that can be linked when appropriate, the design of workforce studies, and interpretation of the latter, in turn, are a function of several considerations: (a) the types of workforce questions being asked; (b) the purposes of those asking the question or who otherwise are intended consumers of the workforce information generated; (c) and contextual issues of environmental scans related to the workforce at different points in time. A brief review of these considerations is presented in Exhibit 3.

APA In-House Capability for Workforce Analyses

In discussing alternative venues through which these types of developments might be undertaken, the Study Panel concluded that the development of an ongoing APA in-house capability for workforce analyses is likely in the long run to be of greater cost-benefit to the APA than relying

on other agencies or external contracts for all such studies. It is easier to control the quality and focus of research done internally. Our discipline would be defined consistently, which it is not at present; much less time would be spent educating contractors about the discipline; and more time would be spent actually collecting and analyzing information in a manner that is sensitive to the needs of the discipline and profession as well as public policy decision-makers.

In this context, it is instructive that several other major health and human service professions have such standing in-house capabilities, in medicine (through the Association of American Medical Colleges), dentistry (through the American Dental Association), and social work (through the National Association of Social Workers). Exhibit 4 provides a comparison psychology with social work and medicine, including two of its specialties, in terms of capability to answer certain basic types of questions related to the health services workforce.

Other health professions also have established ongoing capabilities for workforce analyses. Pharmacy has such a capability through its Pharmacy Manpower Project, a nonprofit corporation of major national pharmacy professional and trade organizations. In nursing, the capability is achieved through collaborative efforts of the American Association of Colleges of Nursing, the National League of Nursing, and the American Nurses Association. Although the British social system differs from ours in regard to its health and psychological services, it is important to note that the British Psychological Society (2004) likewise has been engaged in workforce analysis to shape psychology's workforce in that country and to garner public funding for research, clinical, and academic activities deemed necessary to meet anticipated educational and health care needs. The APA needs to assume such functions in this country for our scientific discipline and profession.

Presently, the APA is *not* in a position to quickly and routinely document workforce supply and demand data as other professional and disciplinary associations are able to do for policy makers and public agencies responsible for funding support of professional education and training, scientific research, and other public practice challenges. As a discipline and profession we are not able currently to develop evidence-based workforce policy guidelines as medicine is able to do (Council of Graduate Medical Education, 2005; Goodman, *et al*, 2005; Institute for Alternative Futures, 2005). Lacking such capability, when public policy makers or agencies make decisions or assumptions related to workforce needs, psychology is subject to being ignored as a separate discipline and profession, defined inappropriately, or presumptively aggregated with other disciplines or professions in federal initiatives. A report of the National Center for Health Workforce Analysis (2003), sponsored by the Bureau of Health Professions, Health Resources and Services Administration, U.S. Department of Health and Human Services is a particular but not unusual example of psychology being ignored. This means that psychology is likely to receive neither systematic recognition nor the necessary resources for its development through education, research, and public service as a discipline and a profession.

Historically, of course, some aspects of workforce studies have been undertaken at various times for particular purposes through the APA Research Office or other APA offices, organizational bodies, or task forces. Unfortunately, with a decentralized approach to workforce issues, results of such studies are not always known to others who may also have an interest in their outcomes;

and, in instances when one part of the Association is not aware of studies of potential interest being conducted by another part, there are lost opportunities for collaboration. *By having a center for workforce analysis and research, as presently proposed, with organizational ties to the directorates and a governance oversight body, more effective communication about workforce studies and databases could be realized within the Association.* This information could be made more available as well to APA members, affiliated organizations, and others in need of such.

Resources for a Center for Psychology Workforce Analysis and Research

Undertaking such an endeavor would require policy, organizational, and financial commitment of the APA to the importance of workforce analysis, plus the resources and structure needed to make this an ongoing organizational activity. The policy and organizational elements are addressed in the two action plan recommendations of this report. If such actions were to be approved, financial resources for this development would be expected from sources both internal and external to the APA. The APA has an infrastructure for such a Center in its Research Office. That office already has a budget. With minimal additional staffing, a shift from relying on temporary interns to permanent research assistants, in addition to formalized relationships with other offices in the Association, and a mission focus that has been broadened to include consideration of workforce demand, need, and projections, that office could be converted to the Center for Psychology Workforce Analysis and Research (CPWAR). Initial estimates of a budget for such a center are provided in Table 1. Brief commentary in support of the budget is provided below.

Table 1

PROPOSED CPWAR BUDGET

	Personnel	Office/Cubicles	Budget
Current Research Office	5F-T/7P-T	4/6	\$541,500
Proposed Workforce Center	11F-T	6/5	\$641,500

Commentary: The current Research Office budget can cover the initial personnel costs associated with the proposed reorganization of the Research Office to a Center for Psychology Workforce Analysis and Research, but this would require using funds presently allocated to lines other than salary and benefits. In order to proceed smoothly with new tasks, it is estimated that an increase of \$100,000 would be required for the proposed CPWAR budget in 2007. A detailed business plan related to the proposed Center would need to be developed to address specific budget and staffing issues and to outline work expectations of the Center.

Concluding Comments

Psychology as a discipline and a profession must have an ongoing workforce analysis capability

if it is to:

- compete successfully for appropriate recognition in public policy and public funding for its education, research, and service functions for the benefit of society;
- provide appropriate information about careers in psychology to students and others of the public who need such information;
- adequately educate and train the next generation of psychologists in all career areas of the discipline and profession; and,
- identify the continuing education needs of its present workforce in light of the changing employment environments and knowledge base in the discipline.

The APA as the largest and most diverse organization of psychologists in the world should assume the leadership role in establishing such a capability. Establishing a workforce analysis capability through the proposed Center for Psychology Workforce Analysis and Research within the APA would be an investment for the future of psychology as a scientific discipline and a profession.

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SUMMARY OF AVAILABLE DATABASES WITH INDICATIONS OF SCOPE, CONTENT AND UTILITY

Prepared for The APA Workforce Taskforce
November, 2005

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Brief Presentation and Summary

- **Provide an overview of databases relevant to the enumeration of psychologists in the United States.**
- **Detail a few of the notable characteristics of these databases, including their original purposes.**
- **Note utility and limitations.**
- **When possible, analytic concerns and technical issues addressed (very briefly)**

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Databases

- **U.S. Census: 2000 Census of Population and Housing, Summary File**
- **U.S. Census: 2002 Economic Census Industry Series Report**
- **U.S. Census/Bureau of Labor Statistics: March Current Population Survey**
- **NCES Postsecondary Education Databases**
- **National Study of Postsecondary Faculty (NSOPF)**
- **National Science Foundation Databases**
- **APA databases**
- **SLB- Rosters of licensed psychologists**
- **National Center for Health Workforce Analysis**

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U.S. Census: 2000 Census of Population and Housing

Summary File 3

(Adapted from their website:

<http://www.census.gov/prod/cen2000/doc/sf3.pdf>)

- Population items include basic population totals; urban and rural; households and families; marital status; grandparents as caregivers; language and ability to speak English; ancestry; place of birth, citizenship status, and year of entry; migration; place of work; journey to work (commuting); school enrollment and **educational attainment**; veteran status; disability; **employment status**; **industry, occupation**, and class of worker; income; and poverty status.

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U.S. Census: 2000 Census of Population and Housing

Utility and Limitations

- **Universe Sample**
- **Doctorate is not detailed by field or discipline.**
- **Occupation is an open-ended question.**

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U.S. Census: 2002 Economic Census Industry Series Report

Purpose

(Adapted from their website: <http://www.census.gov/econ/census02/>)

- **Taken every five years**
- **Goal: provide data about the structure and functioning of the U.S. economy.**
- **“Establishment” data**
- **Sample Outcome Composite Measures:**
 - the gross domestic product estimates
 - input/output measures
 - production and price indexes, and
 - other statistical series that measure short-term changes in economic conditions.

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U.S. Census: 2002 Economic Census Industry Series Report

Basis of Reporting

- **“Establishment” data: each business entity is coded by its primary business function. Provides data on sales, receipts, etc. of single and multiple-site businesses organized by major industry.**

Utility and Limitations

- **Sufficient detail for psychologists is not available (more detail from form itself is found in printed overview)**

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U.S. Census/BLS: March Current Population Survey

Purpose

(Adapted from their website: <https://beta.ipums.org/cps/data.shtml>)

- **The CPS is a monthly U.S. household survey conducted jointly by the U.S. Census Bureau and the Bureau of Labor Statistics.**
- **A battery of labor force and demographic questions is asked every month.**
- **Over time, supplemental inquiries on special topics have been added for particular months.**
- **Among these supplemental surveys, the March Annual Demographic File and Income Supplement (hereafter referred to as the March CPS) is the most widely used by social scientists and policymakers**
- **IPUMS-CPS is an integrated set of data from 42 years (1962-2003) of the March CPS (U Minnesota)**

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U.S. Census/BLS: March Current Population Survey

Utility and Limitations

- **IPUMS at Minnesota:** variables in IPUMS-CPS are coded identically or "harmonized" for 1962 to 2003.
- **Comprehensive, employment-oriented survey** that examines household, family and person variables.
- **Education and occupation** are recorded in the CSP, as well as many other labor-related variables.
- **Members of the armed forces who live in off-base housing or on base with their families** are included in the March CPS.
- **However, discipline of the degree is not recorded.**
 - Filtering for the doctorate, one could count all those who were coded as psychologists and as academic instructors in post-secondary institutions in psychology. This would miss a lot of psychologists.
 - There is no designation for psychologist by context, except for instructors.
 - Those in business may not list themselves as a "psychologist".
- **The CPS might be used as a soft check.**

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NCES Postsecondary Education Databases

Summary: Type and Level of Data Provided by NCES

Type of Data	School	State	National
Students	IPEDS	IPEDS	IPEDS, BPS, B&B, NELS
Faculty/Staff	IPEDS	IPEDS	IPEDS, NSOPF
Finance	IPEDS	IPEDS	IPEDS
Student Aid	IPEDS	IPEDS	NPSAS
Completion	IPEDS	IPEDS	IPEDS

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National Study of Postsecondary Faculty (NSOPF)

- **Four surveys** have been conducted 1988, 1993, 1999 & 2003.
- **Institutional survey:** data on turnover rates, tenure and retirement policies, benefits and retirement plans, methods for assessing teaching performance.
- **Faculty survey:** data on backgrounds and academic credentials, productivity/ work load, compensation, professional development, future plans, and job satisfaction.
- Each faculty survey is a a stratified/weighted national sample of faculty with some instructional duties from public and private, not-for-profit from **2 year public colleges to Research I** institutions.

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NSOPF - Design

- **Primary design features**
 - Cross-sectional study of full-time and part-time, permanent and temporary faculty in the United States
 - IPEDS institutional data is appended to each case
 - Will continue for foreseeable future but not annual.
 - Basic demographic and human capital questions show consistency from year to year
 - Some workload, attitude, and opinion questions may change but some questions have been in use for 15 years.

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NSOPF – Analytic Features

- Provides information on
 - Individual classification in terms of primary activity, degree, and research
 - Institutional classification information (IPEDS)
 - Demographics
 - Educational background (no sub-discipline info)
 - Current and previous employment characteristics
 - Faculty status and rank
 - Recent and career higher ed and non-higher ed jobs
 - Income (self, household, institution, consulting, etc.)
 - Work-related variables: Instruction, Plans, Publications, Ratings of Facilities and Physical Plant
 - Other research activities (grants, etc.)
 - Attitudes
 - Opinions
 - Satisfaction

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NSOPF Analytic Concerns

Utility and Limitations

- Only counts those employed in PSE
- One of the most accurate databases examining all of higher education instructional faculty
- Provides rates of tenure, comparison of psychology to other disciplines, and underemployment of psychologists.
- Detail for psychologists' sub-discipline unavailable
- Administrators with PhDs in psychology are only in the pile if they also teach.
- All variables are self-reported except for institutional features
- Postgrads are deliberately excluded
- Disproportionate sampling means some psychology N's are small (e.g., research as primary activity for new doctoral candidates) with correspondent large estimated error.
- Satisfaction with employment and related variables may be censored due to how faculty names are elicited and survey is distributed

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National Science Foundation data sources

With thanks to the NSF and NORC websites from which much of this was taken verbatim

- **NSF SAMPLE SURVEYS:**
 - Survey of Earned Doctorates (SED)
 - Survey of Doctorate Recipients (SDR)

Overview

- **Survey of Earned Doctorates (SED)**
 - An annual survey of new PhDs asking about educational background (all levels), time to degree, sources of support, debt, employment intentions, and demographics/background data.
 - Data are available by psychology subfield.
 - Its utility is limited for psychology in that it excludes PsyDs resulting in undercounts of this sizeable part of the psychology workforce.

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National Science Foundation data sources

Overview

- **Survey of Doctorate Recipients (SDR)**
 - SDR is a biennial survey of 40,000 science and engineering PhDs (doctorate recipients who earned their degrees from institutions within the United States).
 - This study is the only source of national data on the careers of science and engineering doctorate holders, and it provides key data on the education and training, work experience, career development, and demographics of this important population in the United States.
 - Data include employment status, setting, activity, salary, relatedness of training to work, influences on choices for recent PhDs, demographics. Only PhDs are included.
 - It would be possible to acquire a license and a copy of the database in order to conduct analyses that we specifically would want.

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National Science Foundation data sources

Utility and Limitations

- **Good response rate**
- **Excellent for PhDs, not PsyDs.**
- **All variables are self-reported except for some limited info provided by institution on non-respondents**
- **Postdocs are identified**
- **Psychology Ns are good**
- **Research questions are inconsistent from year to year.**

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APA data

Individual-level data

- **Annual Member Directory Survey (census)** currently undergoing revision to a web based form that will be pushed to all members each year. Some small proportion will remain reliant on hard copy. Includes students and affiliates.
- **Biennial Salaries in Psychology (sample)** - RO distributes the salary survey to a large sample of members every two years. Of limited utility to the central goal of the TF as it provides salary data and employment information. On occasion, these data have been used to update that from other related databases. Member id provides link to other Databases. Response is abt 50%.

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APA data

Individual-level data

- **Biennial Doctorate Employment Survey (census)** – RO surveys as many of the new doctorates in psychology that it can every two years. Good source of information on PsyD graduates.
- **MFP databases (forthcoming) (census)** – MFP has designed a database of the students passing thro the MFP experience. Follow up with participants as to career development is occurring as part of ongoing evaluation.
- **APA/APPIC Data on interns** – APPIC has developed capacity to collect data directly from intern applicants, APA collects data also. Allows description of the process from school, application, applicant characteristics, and outcome

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APA data

- **Departmental/Program data**
- **Graduate Study in Psychology (census)** Data are collected annually from graduate psychology departments and programs
- **Annual Faculty Salary Survey - (census)** Data collected each Fall from graduate psychology programs on faculty demographics, rank, tenure, status, salary.

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APA data

Timing

- **Most APA databases can be analyzed and results used within 6 months of the end of data collection.**

Graduate Study in Psychology and faculty salary data are 2 examples of those that are available within a 3-month window. Salaries in Psychology, Doctorate Employment Survey usually take some time due to data cleaning.

Member data by close of 2006 available on a rolling basis – annually all members will be contacted for information updates. Extracts of the data at the point of request would be possible.

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APA data

Design

- **Cross-sectional** in nature with exception of MFP databases
- **Data efforts will continue** for foreseeable future but not annual.
- **Questions not necessarily consistent** from year to year.
- **Modest to good** completion rates
- **Includes PsyDs and PhDs**

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APA data

Data Sources

The data come from the individual directly (student, member, intern, new doctorate, psychologist) or from department (faculty salaries, graduate study), or from internship site APPIC/APA study)

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APA data

- Most of the reports drawn from these survey efforts can be found on the research office website at <http://research.apa.org> or by calling 202 336 5980 or by emailing us at research@apa.org

UTILITIES /LIMITATIONS

- Response rates have slipped in the past decades and we work hard to get 50%.
- Certain subgroups respond better than others
- Source of data on PsyDs.

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APA data

TECHNICAL ISSUES

- Vary by database and survey. See individual reports on line at <http://research.apa.org> for discussions of response, data availability or caveats.
- None of the ongoing APA databases is of much utility with respect to masters- or bachelors- level education. Intermittent surveys at each of these levels yield low response rates.
- Would rely on NCES and NSF for any data on levels below doctorate.

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State licensing board data

State Licensing Boards – Rosters of licensed psychologists

- Each state maintains a list of the psychologists licensed in that state. Access to these lists would allow deduplication and a count of the licensed psychologists in each state. With addresses these could be taken to the zip level

TECHNICAL ISSUES/LIMITATIONS

- Deduplication and establishing contacts with each bd would take some time.
- <http://www.asppb.org/handbook/handbook.aspx>
- The actual counts represent practitioners who chose to be licensed –would be the truest count of active practitioners we have.

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National center for health workforce analysis - ARF

Area Resource File = ARF

- A health resource information system that enables policymakers, researchers, planners and others to analyze the current state of health care access at the county level. The ARF database contains more than 7,000 variables for each county in the U.S., including geographic codes and classifications; health professions supply and detailed demographics; population characteristics and economic data; environment; and health professions training resources.
- data collected from more than 50 sources and is the result of processing millions of micro data records
- Additional data are regularly incorporated into the ARF database, which is updated and issued annually.
<http://bhpr.hrsa.gov/healthworkforce/data/arf.htm>

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National center for health workforce analysis - ARF

LIMITATIONS

- Kathleen reported in an email, 10/18/06:
 - They collect data on psychologists, however – it is at the county level and it is from the Census.
 - This would be of insufficient detail for our needs.

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Workforce Analysis: Questions, Databases, and Environmental Scan

A. Workforce Questions

Workforce analyses are driven by questions. Examples follow. These questions are stated in rather broad terms, and it is clear that many more specific questions would follow when planning workforce studies to address these extensive questions.

- In twenty years, what will be the supply and demand for licensed psychologists in our nation's health care system, for psychology faculty positions in our nation's colleges and universities, and for psychological scientists in our nation's research and industrial institutions?
- How has psychology's workforce changed in each of the preceding employment sectors over the past twenty years? How balanced currently is the supply of and demand for psychologists of various subfields in different employment sectors and geographic areas? What trends are projected under various sets of assumptions?
- Under what assumptions about careers do students enter the psychology workforce pipeline at different levels of education and training, and how have these assumptions changed over the past decade or more? How coherent are these assumptions with current or projected market demands for different elements of the psychology workforce?
- What is the scope and prevalence of unemployment and underemployment among psychologists? What characterizes those who are unemployed or underemployed? Are there other categories of less than optimal employment condition that need recognition?
- How do psychologists compare with professionals of other disciplines in time to degree, level of education indebtedness, and market value (*e.g.*, demand, salary, advancement) across subfields of psychology and employment sectors? How has this changed over the past decade?
- How demographically diverse is psychology's workforce and student pipeline in age, gender, and racial/ethnic composition, as well as in career interests? What are potential implications of this composition for the future of the discipline in our society and a global economy?
- How compatible are the goals of faculty for their students' development with the needs and expectations of future employers of their students? What is the experience of recent graduates and their employers in terms of this "goodness of fit?"
- For psychologists who have been in the workforce for more than 20 years, what types of changes have occurred in: (a) types of settings and roles in which they function; (b) additional competencies they have developed related to their employment and how those

were developed; and, (c) their income and quality of life as a member of the workforce?

- How do psychologists in the first five years of their employment view the following aspects of their work: (a) how well prepared are they for what is expected of them; (b) how close is what they are doing to what they expected to be doing; (c) how satisfied in general are they with their employment; (d) how likely are they to look for another type of job within the next five years; and, (e) if they are planning to change jobs, what factors are driving that plan?
- How might a lifelong learning system of education and training be designed and supported for the psychology workforce to accommodate the need for changes in early career preparation? How might this be done for those already in the workforce who need or desire to change career paths or to develop additional professional competencies beyond those normally developed through continuing education programs?
- Over the next 10 years, how will the psychology workforce be impacted by retirement or other losses? In what types of functions and settings are these likely to occur? How likely are the jobs vacated by these losses to remain as they are or change and, if the latter, how? What projections are there for their replacement in the workforce by persons with appropriate competencies to fill the jobs?

In planning workforce studies to address such questions, it is critical to know who is posing the question, why the information is being gathered, how it will be used, the timeframe within which the information is needed, and the resources available for obtaining the information. Among the resources, there needs to be a determination of the utility of existing databases, the need for additional database development, the types of workforce analysis models and methods most appropriate for the questions asked, and the extent to which an environmental scan is needed to provide a context for the information collected. These considerations, in turn, determine to a large extent the financial resources needed for the studies and analyses.

B. Core Database Requirements

The following lists represent **minimum** and necessary elements of the core relational databases:

1) Current workforce trained in psychology

- Demographic characteristics (e.g., race, sex, race/ethnicity)
- Educational background
- Type, subfield, and year of degree
- Geographic location
- Citizenship
- Licensure
- Status, settings, and work activities
- Client and student populations served
- Indicators of underemployment
- Salary and/or income

2) The pipeline for psychology (input, flow, and leakage)

- Citizenship
- Demographic characteristics (e.g., race, sex, race/ethnicity)
- Institutional location
- Previous educational histories
- Subfield of training program
- Time to degree
- Financial support
- Educational indebtedness
- Applications, admission, and enrollments in graduate psychology programs
- Applications and matches to psychology internship programs

In order to maximize the utility of workforce analysis, three additional and complementary activities are needed: (1) additional and secondary analysis of data sets from other organizations (e.g., NCES: NSOPF, B&B; NSF: SED, SDR); (2) outreach to other organizations that collect and analyze data on workforce issues relevant to psychology, building collaborative relationships across the field; and, (3) increased opportunity for disseminating workforce analysis findings.

C. Environmental Scan Issues

Workforce analyses are typically conducted in a context of assumptions or alternative scenarios framed on the basis of an environmental scan. That is, they are based on trends or possible trends in the social, technological, economic, and political sectors external to but potentially related to the discipline or profession for which the workforce analysis is conducted. Environmental scans and scenarios typically are relied on by businesses as part of their strategic planning processes and directly impact the goals and directions the businesses follow (Morrison, 1992). The focus is outward on the environment and how changes there may impact the organization. Increasingly, the central arms or organizations representing disciplines or fields are using the results of environmental scans as part of their planning strategies to provide a vision of the future. In short, environmental scans provide a context for the interpretation of workforce data for disciplines or professions relative to national or international trends in societal forces that carry the potential to impact supply and demand in these disciplines and professions.

Trends of this nature can be assessed from government agencies (e.g., U.S. Bureau of Census, U.S. Department of Labor, U.S. Department of Commerce, U.S. Department of Education, and U.S. Department of Health and Human Services), national associations (e.g., American Council of Life Insurance, National Academy of Sciences, and National Science Foundation), and international associations (e.g., United Nations and World Health Organization), general periodicals (e.g., newspapers and magazines), technological, economic and environmental periodicals (e.g., *The Economist*, *Ecodecision*, and *Scientific American*), and private foundations and institutes (e.g., PEW Foundation, RAND, the Hudson Institute, and Brookings Institute).

Three major societal forces of relevance to workforce analyses in psychology are population demographics, changes in market sectors, and the public's perceived value of the discipline and

profession. A brief explication of these forces follows.

- Population Demographics

Changes in age and ethnicity in the United States carry a significant potential for impact on the supply and demand equation in psychology. Changes will impact future projections of the education and training pipeline in psychology, loss of workers from the psychology workforce, and demand for the types of knowledge and services provided by the psychology workforce. Related to the latter is an understanding of the cultural context in which the discipline's or profession's knowledge base is developed and in which professional services are provided. These variables are cited in the recent report of the APA Policy and Planning Board (American Psychological Association, 2005) both in terms of their potential impact for the psychology workforce and the types of services provided by that workforce. Another example of the implications of these demographic variables specifically focused on other health professions is that issued by the Bureau of Health Professions (National Center for Health Workforce Analysis, 2003).

- Changes in Market Sectors

The psychology workforce is sensitive to market sector changes or trends in education, business and industry, science and technology, and the varied health and human services systems within which the psychology workforce is employed. Technological advancements and increased globalization of commerce have direct impacts on each of these market sectors.

- ❖ Education

In education, increasing numbers of the population need postsecondary education for employment, including those already in the workforce who need to upgrade their skills or develop new competencies. This has resulted in a significant increase in community college enrollments, the most diverse population of students in age and ethnicity of any group of higher education institutions. These institutions also rely to a major extent on adjunct or part-time faculty for teaching and are not the types of institutional settings within which most of the graduate students in psychology are being prepared to work or in which they even aspire to work. Distance learning models likewise are increasing as modes of education, and could be influenced in the future by globalization trends (*e.g.*, exporting education services). Another trend, especially in community colleges and comprehensive universities with large undergraduate teaching loads, is the increase in part-time, non-tenured academic roles. Among psychologists in research universities and other types of higher education institutions, there has been an increase in the diversity of settings in which psychologists serve as faculty, settings that differ in sub-culture contexts (*e.g.*, schools of medicine, nursing, public health, engineering, business and education in addition to the arts and sciences colleges and the professional schools of psychology). A generation of faculty is about to retire and this will have an unknown effect on current and future psychology faculty. We cannot predict whether academic lines within departments will stabilize or shift to other disciplines within institutions. Furthermore, retirements will permit departments to recast their strengths, with some older specialties (*e.g.*, physiological) being replaced by newer ones (*e.g.*, neuroscience). In some instances, a specialty area may not be replaced. These changes will, in part, drive the demand for faculty in psychology and have a concordant effect on doctoral faculty and preparation

of students. The economics and public policy of higher education also significantly impact the student pipeline (*i.e.*, who can afford such education and how it can be funded) as well as those in or considering academic positions as faculty. Potential student debt in the context of potential earnings following one's education could have a major impact on the future supply and career choices of students preparing for the professions, including psychology.

❖ Business and industry

In business and industry, technology and globalization of function have influenced many traditional workforce functions. Those of the psychology workforce being prepared for possible employment in this sector, whether in the general form of organizational consultation, human factors design of technology systems, or enhancing workforce productivity through strategies of selection, training, and evaluating work team and other system elements, must develop the competencies that are appropriate for such work. Even where many of the traditional functions remain important for those of the psychology workforce employed in business or industry, those competencies must adapt to changes in the organizational environments and technological systems with which they work. Ability to understand the settings and to function in teams with persons of diverse education, professional, and cultural backgrounds is essential.

❖ Science and technology

Change is intrinsic to science and technology, and its rate is increasing over time. This is true for substantive areas of focus, for the way work is done in the conduct of science and development of new technologies, and for the information and competencies needed by those of the workforce involved in each activity. These types of issues have been of significant priority for our nation in recent years (National Academy of Sciences, 2000; National Academy of Sciences, National Academy of Engineering, and Institute of Medicine Committee on Science, Engineering, and Public Policy, 1995; National Research Council Committee on National Needs for Biomedical and Behavioral Scientists, 1994, 2000, 2005; National Science Foundation, 1996). For psychological scientists, and those who apply psychological science to technology development, opportunities for employment outside the traditional academic settings have increased over the past half century. Within academic institutions, psychologists find employment through a variety of institutional units from problem focused research centers to academic departments in virtual professional schools and colleges. Far greater opportunities exist today for psychologists to engage in interdisciplinary research, within and outside academic institutions, the result of which, in some cases, can be a redefinition of identity, such that psychologists (as well as scientists from other disciplines of origin) lose their identity as psychologists and assume new identities (*e.g.*, psychologists becoming more identified as neuroscientists or as generic behavioral scientists).

❖ Health and human services

In the health and human services sector, health care policies and reimbursement practices have significantly changed the types of services provided by all health professionals including those of the psychology workforce. Other market sector forces related to these types of services include the development of other licensed professions and their scope of practice, the increasing trend for

health and human services to be provided in an inter-professional practice context, and the impact of these factors on the potential demand for competencies that are distinctive of each professional group within that context. The psychology workforce in this context, for example, must be prepared to offer distinctive competencies in such service systems as primary health care, community mental health services, rehabilitation services, and school systems. Demand for these types of inter-professional roles has implications for the competencies developed in the psychology workforce from the pre-service education and training of students through lifelong continuing education for those already in the workforce who need to develop new competencies to adapt to changing market sector demands.

- Public's Perceived Value of the Discipline and Profession

Psychology as a profession has increased significantly in recent years its advocacy and public education efforts, and on many occasions in different ways has made public the value of its discipline and professional services to society. Psychologists who volunteered their services this year in the aftermath of hurricanes Katrina and Rita are but one recent example of the latter. Psychologists who have testified before many different Congressional committees on the usefulness of psychological science are another example (*e.g.*, behavior related to threats of terrorism, community violence, panic related to epidemics, etc.). The APA has invested considerably in public information campaigns related to the value of psychological services.

These direct representations of psychology's usefulness to society are a major prerequisite for a scientific discipline and profession being valued and therefore in demand in terms of the nation's workforce needs. There are many national priorities addressing societal needs that also apply to psychology, though they may not cite psychology specifically in every instance either as a scientific discipline or as a profession in their public recognition of societal needs. A few recent examples are the following publications of commissioned national reports: *The changing nature of work: Implications for occupational analysis* (National Research Council, 1999); *Mental health: A report of the Surgeon General* (U.S. Department of Health and Human Services, 1999); *To err is human: Building a safer health system* (Institute of Medicine, 2000); *Healthy people 2010: Understanding and improving health* (U.S. Department of Health and Human Services, 2000); *Addressing the nation's changing needs for biomedical and behavioral scientists* (National Research Council, 2000); *Crossing the quality chasm: A new health system for the 21st century* (Institute of Medicine, 2001); *Older adults and mental health: Issues and opportunities* (U.S. Department of Health and Human Services, 2001); *Advancing the nation's health needs: NIH research training programs* (National Research Council, 2005); and *Healthy people 2010: The cornerstone of prevention* (U.S. Department of Health and Human Services, 2005).

The essential parameters outlined in these reports also serve as crucial contextual factors, *i.e.*, elements of an environmental scan, for the conduct of a discipline's or profession's workforce analyses. In turn, the capability for assessing psychology's workforce needs in the context of these types of national priorities is critical for our access as a discipline or a profession to the federal resources that are typically made available for professional education and training, scientific research, and the health or public service structures that result from Congressional or federal agency actions to address the national priorities.

Exhibit 4

Workforce questions for which disciplines are able to provide data

	Discipline				
	Medicine	Pediatrics	Social Work	Psychiatry	Psychology
1) How many professionals in the discipline are currently in the workforce?	☒	☒	☐	☒	☐
How many of these are involved in patient care/clinical services?	☒	☒	☐	☐	☐
How many are involved in research?	☒	☒	☐	☐	☐
2) What is the projected number of professionals in the workforce...					
... 5 years from now?	☒	☒	☐	☐	☐
... 10 years from now?	☒	☒	☐	☐	☐
3) Is the current supply of professionals adequate to meet the demands for...					
... patient care/health services?	☒	☒	☐	☐	☐
... research?	☒	☒	☐	☐	☐
... college faculty?	☒	☒	☐	☐	☐
4) What does the current pipeline look like for the discipline?	☒	☒	☐	☒	☐
5) What is the participation of women in the workforce?	☒	☒	☐	☐	☐
6) What is the participation of minorities in the workforce?	☒	☒	☐	☐	☐

Note: "x" indicates an ability to answer the question fully

"~" indicates that estimates exists or that the information only exists for the discipline as a whole and for broad categories.

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