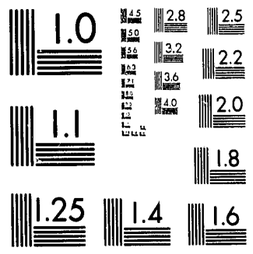

OBTS IN MASSACHUSETTS: HOW WILL IT HELP US?

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EXECUTIVE SUMMARY

This paper discusses some of the possible uses of the Offender Based Transaction Statistics (OBTS) segment of the Criminal Justice Information System (CJIS).

Possible uses of OBTS can be grouped into the following broad categories:

(1) Flow analyses to determine how many people move between major steps within the criminal justice system and to determine how long it takes between steps.

(2) Descriptions of the characteristics of individuals involved in the criminal justice system.

(3) Management information reports.

(4) Special studies designed to analyze the relationships between variables.

Examples of each of these uses are discussed. Since OBTS is still in its developmental stages, readers are urged to let the Statistical Analysis Center know which of the potential uses of OBTS are perceived as having the highest priority.

A. INTRODUCTION

1. Purpose Of This Paper

L.E.A.A. has given the state of Massachusetts funds for the development of a computerized Criminal Justice Information System (CJIS). As the time draws near for the completion of the development phase of this system and Massachusetts' decision makers contemplate the advisability of assuming the operating costs of this system, a number of questions are necessarily raised about whether the benefits of the system are justified by the costs. While the Massachusetts Statistical Analysis Center (SAC) is not in a position to explain all the potential benefits of CJIS, we have been active in developing the Offender Based Transaction Statistics (OBTS) segment and feel that the nature of this segment should be clarified to potential users of the information from OBTS. The purpose of this paper is three-fold: (1) to explain the potential uses of OBTS, so that those responsible for deciding if CJIS should become a reality in this state will be aware of the potential benefits of this segment of CJIS; (2) to allow potential users of OBTS to react to our conception of OBTS, so that any needed modifications to the system can be made prior to its implementation; and, (3) to allow potential users to assist SAC in prioritizing reports and studies which could be prepared using the OBTS data base, so that SAC staff can concentrate on producing that information which is most desperately needed prior to becoming involved in less important activities.

2. Explanation of OBTS

OBTS is defined as a data set which is based on the individual offender rather than on a case, arrest or some other unit of analysis. In Massachusetts the computerized OBTS system will be obtained from the CCH (computerized criminal history) segment of the CJIS file, which records contacts with the criminal justice system. Rather than have a massive OBTS file which differs from CCH only in format, SAC has proposed that the OBTS system consist of conversion programs which can take specified information from the CCH file and convert this information into output which can be easily manipulated using standard statistical programs. The resulting files will be stripped of all individual identifiers except for the arbitrary code numbers.

Information available on OBTS research files will normally include four types of information:* (1) Personal history information (e.g., town of residence, year of birth, occupation), (2) Information about the "target" event (e.g., if one were interested in individuals arrested in Boston in 1978, the "target" event would be the arrest which made the individual eligible for inclusion in the sample. Examples of information about the target event include date of arrest, date of final case disposition, and sentence received), (3) Summary of events prior to the "target" event (for example, number of prior felony arrests, number of prior incarcerations), (4) Information about events which occurred subsequent to the "target" event (e.g., number of felony arrests subsequent to the target arrest, number of incarceration sentences associated with the target arrest).

* See Appendix A for a list of relevant CCH variables.

The research files which result from OBTS will be analyzed by SAC or other researchers in order to provide statistical tables and reports. It is our hope that these final outputs will be of use to criminal justice decision makers.

3. Organization of the Paper

The second section of the report will explain the types of information we will be able to obtain using OBTS. The following types of information will be discussed: (1) Description of the flow of individuals through the criminal justice system, (2) Determination of the characteristics of individuals involved in the criminal justice system (3) Specialized management information tables (4) Special studies aimed at discovering relationships among the variables measured in OBTS (e.g., what factors affect the severity of sentence imposed).

The third major section of this paper will discuss the advantages of using a computerized OBTS system instead of obtaining the information manually from presently existing records. Throughout this paper we will refer to the manual OBTS study which we performed. The findings of that study are presented in a companion paper, "Case Processing in Boston: Findings of a Pilot Study".*

* This study tracked 358 individuals arrested on a felony charge in Boston during a two week period in April, 1974. The study can be obtained from the Statistical Analysis Center, Massachusetts Committee on Criminal Justice, 110 Tremont Street, Boston, MA 02108 (617) 727-1498.

B. TYPES OF ANALYSES POSSIBLE FROM A COMPUTERIZED OBTS SYSTEM

In this section we will attempt to provide the reader with an understanding of the types of information we hope to extract from OBTS. The size and complexity of the file are such, however that it is unlikely that we have come up with all the possible uses of this system. This paper should therefore be viewed as a first step towards clarification of OBTS rather than a final definition.

1. Flow Analysis of the Criminal Justice System

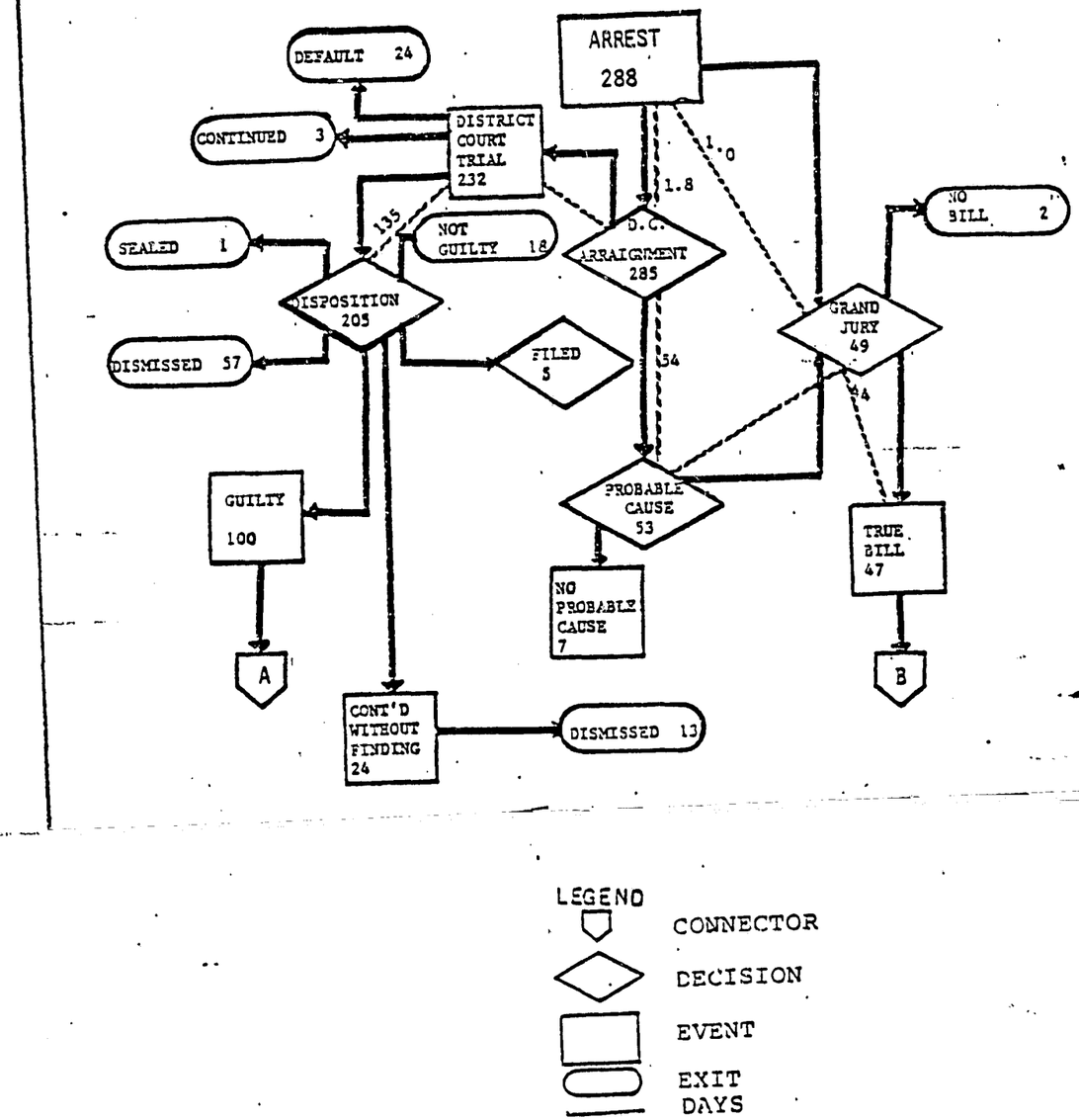
The primary purpose of OBTS is to provide information about the flow of individuals through the criminal justice system. An example of this type of diagram, taken from our manual OBTS study is presented in Figure 1.

There are several important advantages of viewing the criminal justice system in terms of the various steps a case follows as it goes through the system. First, this perspective should facilitate planning. For example, if demographic analyses were to indicate that we should expect a 10% decrease in crime rates next year, this would have an immediate effect on police workload, but may not have an effect on prison workloads for several years. Flow diagrams can be used to make such projections. *

* An especially interesting application of such models is their use in computer simulations of the criminal justice system. Such simulations permit testing out the probable effect of one part of the criminal justice system on other parts.

FIGURE 1

Flow Diagram for Adults Arrested in Boston
During First Two Weeks
April 1974



Numbers within figures represent number of individuals who reach the indicated step in the process

A second advantage of the flow analysis is that it permits us to examine all the possible outcomes of an arrest. This information is important for individuals who wish to assess the deterrent and incapacitative effects of the system. For example, we can determine the percent of individuals arrested for a specific crime who are eventually incarcerated and the average length of time which elapses between arrest and incarceration.

Flow analyses of the criminal justice system can also be of assistance to those individuals who wish to assess the extent of court backlogs and determine where the longest delays are occurring. This information can be used to design programs or assign personnel to expedite any steps which seem to be creating inordinate delays.

2. Determination of the Characteristics of Those Involved In The Criminal Justice System

Determination of the characteristics of people involved in the criminal justice system is one of the most basic and important tasks of criminal justice researchers. An accurate description of offenders has many important pragmatic implications for the criminal justice system. We will discuss these implications briefly in this section and then will discuss how OBTS can assist us in answering this question.

Information on the characteristics of individuals who are arrested provides some clues as to the basic causes of crimes. For example, the high rate of unemployment and the low income of arrestees may suggest that much crime is economically motivated.* To the extent that this is a correct inference, it suggests that one method of preventing crime is to improve the economic conditions of disadvantaged individuals.

A second important effect of knowing the characteristics of arrested individuals is that it should facilitate the projection of arrest and crime trends for Massachusetts. For example, national arrest data for Part I crimes has shown that arrest rates vary markedly with age.** Since we can predict future age distribution for the population with some accuracy, information on age-specific arrest rates permits us to predict future arrest and crime trends attributable to anticipated changes in the age distribution of the population. Such projections are extremely important for the proper planning of facilities and other resources within the criminal

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* It is important to note that in making such inferences one must be cautious, since arrestees are not necessarily representative of all individuals committing crime. Not all crimes come to the attention of the police. For example, Massachusetts Victimization studies indicate that about one half of household crimes are reported to the police (James Blose, Criminal Victimization in Massachusetts, 1976, Statistical Analysis Center, Massachusetts Committee on Criminal Justice, July, 1978). It is also likely that crimes in which there is no clearly defined victim (e.g., prostitution and drug crimes) or crimes in which the victim may not be aware of being a victim (e.g., fraud, shoplifting, stealing from a employer) are infrequently reported to the police. Further, not all crimes coming to the attention of the police result in someone being arrested.

** Crime in the United States 1976, Uniform Crime Reports, September 1977.

justice system.

A third important reason for analyzing defendant characteristics is that it should assist in the planning of specialized offender projects. For example, if a judge learned of a successful court diversion program for female offenders charged with assault and wished to know if (s)he should consider replicating it, one of the first questions to be raised would be how many defendants would be eligible for such a program. Analysis of the characteristics of those charged with assault would answer the question.

A considerable amount of information about the characteristics of individuals involved in the criminal justice system already exists.* However, a computerized system should allow for significant expansion of this work. Two major advantages of computerization are discussed below.

One major advantage of a computerized OBTS system is that it will provide a much larger sample of cases than can normally be obtained manually. This will permit us to describe offender characteristics in much more detail than is usually done. For example, in our study, "Case Processing in Boston", we could not examine female and male age distributions separately because of the small number of females. It was thus not possible to answer questions such as "Is the typical female offender older than her male counterpart"?

* See "Case Processing in Boston: Findings of a Pilot Study", pp. 17-24 for a discussion of our findings with respect to characteristics of individuals arrested in Boston.

A second major advantage of OBTS is that it will provide standardized annual (or more frequent if desired) information on individuals involved in the criminal justice system. This will facilitate the examination of trend data. Currently the only regularly aggregated information available on arrestee characteristics in Massachusetts is for race, age and sex. A computerized OBTS system will permit the routine annual aggregation of offender characteristics on a much wider variety of characteristics than is now available. Further, it will permit us to obtain this information at as many points in the system as is deemed desirable (e.g., arrest, arraignment, disposition, incarceration etc.).

It is important to note that OBTS will not solve all our information needs on offender characteristics. The most important limitation will be the exclusion of data for juveniles. If CJIS proves to be an effective criminal justice tool, however, it is not unreasonable to believe that a similar system for juveniles will eventually be instituted to overcome this limitation.

3. Routine Reports for Management Information Purposes

OBTS has been designed primarily as a research tool rather than as a management information system. However, it is possible to use OBTS as a way of obtaining routine statistics of potential interest to management. For example, police departments may well be interested in knowing how the individuals they arrest fare in the courts (what percent of the cases are dismissed, convicted, etc.). Further, they are likely to be interested in being able to compare their own police department with other police departments in this respect. In order to satisfy this informational need, OBTS can be programmed to produce tables such as that presented in Figure 2.

FIGURE 2: Example of Use for a Management Information Report of Interest to the Police

LENGTH OF TIME ELAPSED FROM ARREST TO DISPOSITION FOR CASES DISPOSED OF DURING THE SIX MONTHS ENDING_____

Police District 1

Disposition:	Time Elapsed (in days)					Mean Time Elapsed	% of Cases in Disposition Category
	0-7	8-30	31-60	61-120	.....Total		
Complaint Denied:							
Number of Cases							
% in Time Cat.							
:							
Total							

LENGTH OF TIME ELAPSED FROM ARREST TO DISPOSITION FOR CASES DISPOSED OF DURING THE SIX MONTHS ENDING_____

Police District 2 :

:

LENGTH OF TIME ELAPSED FROM ARREST TO DISPOSITON FOR CASES DISPOSED OF DURING THE SIX MONTHS ENDING_____

All Police Districts

An example of a management information report of possible interest to the courts is presented in Figure 3. This report compares courts with respect to the percent of defendants found guilty who are given an incarceration sentence. This report would alert management within the court system to courts which appear to have atypical sentencing patterns. Similar tables could be developed for different sentences, for different offenses or for different court events (e.g., for percent of cases found guilty or for percent of cases in which the individual was released on his (or her) own recognizance.)

An example of a management information report of interest primarily to probation officers is given in Figure 4. The report gives basic recidivism information for individuals placed on probation during a specified year. Similar recidivism tables could be constructed for other groups of individuals, such as individuals arrested in given police districts.

In sum, while OBTS has been designed primarily as a research tool, it is possible to obtain information relevant to management from the system. We have given some examples of tables which could be constructed, but have not attempted to present an exhaustive list of such tables.

FIGURE 3

Example of a Management Information Report of Interest To The Courts

Percent of Individuals Convicted or Part I Offenses Who Received Incarceration Sentences, 19__

	Murder Percent Incarcerated		Auto Theft	Total Part I
District Court 1				
District Court 72				
Superior Court 1				

FIGURE 4

Example of a Management Information
Report of Interest to Probation

Recidivism Rates for Individuals Placed on Probation During
19__, as of January 1, 19__

	Percent Rearrested On Felony Charge	Percent Convicted Of Felony Charge	Percent Receiving Incarceration Sentence	Number of Cases Given Probation During 19
Probation Department 1				
Probation Department 2				
"				
"				
"				
"				
"				
"				
"				
"				
"				
"				
"				
"				
"				
"				

4. Studies Examining The Relationship Between Variables

From the research point of view one of the most exciting uses of OBTS will be the opportunity to test a variety of hypotheses using a large scale computer base. In this selection we give some examples of questions which we will be able to explore using OBTS.*

One important question which can be investigated using OBTS is what factors affect the time required to process cases. For example, it makes sense to prioritize cases on the basis of the severity of offense and severity of prior record, so that serious offenders are processed relatively rapidly. On the other hand, factors such as race and sex should not affect the length of time it takes to process a case. Using OBTS we can estimate the effects which variables such as offense severity, severity of prior record, race and sex on case processing time. Similar analyses can be made to determine what factors affect the guilty/not guilty decision, what factors influence the type of sentence imposed on those adjudged guilty and what factors affect the probability of recidivism.

The questions posed in this section have a number of long-run pragmatic implications. For example, if we were to find that the criminal justice system treated individuals differently according to their race or sex, decision-makers would hopefully take steps to make the system fairer. Similarly, if system variables such as

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* These issues are discussed in more depth in the companion paper.

the court in which a case is prosecuted turned out to be major determinants of what happens to a case, decision-makers might wish to take steps to make the criminal justice system more equitable throughout the state.

C. PROBLEMS OF MANUAL OBTS STUDIES

In the preceding section we attempted to give the reader a general feeling for the type of information which can be obtained from OBTS. A skeptical reader may point out that the information we plan to extract from OBTS could be collected manually. There are, however, several advantages to having a computerized OBTS file. We will discuss these advantages in this section.

1. Time Needed to Collect Data

One of the major contributions of the computerized OBTS system to future researchers will be the amount of leg work it will eliminate, since the manual collection of data is extremely time-consuming. Once the system is operational, it should be a very straight-forward job to set up a computer program to elicit the desired information from the computer files. Not only will this reduce researcher wear and tear, but it should greatly improve the timeliness of reports by speeding up data collection time.

2. Sample Design

Most manual studies are forced to select a very limited group of individuals for study, in order to keep data collection within reasonable bounds. For example, our manual study used a sample of individuals arrested in Boston during a two week period. A computerized OBTS system will permit complex samples to be selected with ease. Not only could we select a random sample of adults arrested in Massachusetts during a given year, but we could also use stratified sampling techniques in order to obtain adequate information about relatively unusual events (e.g., defendants accused of first degree murder).

3. Size of the Sample

Because manual studies are so time-demanding, sample size is usually severely restricted. For example, our pilot project used 358 cases. Small samples create a variety of problems for the statistical analyst. One of the most severe problems is that we cannot easily compare groups of individuals who are similar on all relevant characteristics except one. For example, in attempting to discover whether court of sentencing affects sentence, it is vital to compare individuals who have been convicted of similar charges and who have similar criminal records. With a small sample there will not normally be enough similar cases to make such comparisons. While one can use various statistical techniques in order to control for confounding variables, these require making simplifying assumptions which are often dubious. The larger the sample the fewer such assumptions we need to make.

4. Data Accuracy

During the course of our pilot study we encountered many instances in which the information available in the courts was of questionable accuracy. In many cases information recorded in district court offices differed from information collected by the police.

A computerized system will not, of course, guarantee accuracy. There are, however, computer procedures which can help improve accuracy. For example, one reason for incomplete criminal records is the use of aliases. We found cases in which there were records for a "John Doe alias Tom Smith" that were not the same as the records for "Tom Smith alias John Doe". Such alias checks, which are easily overlooked by harried clerks, can be made an automatic

part of a computerized system.

5. Missing Data

We found numerous cases of missing data in the pilot study. For example, the clerk's office at the district court in theory collects all pertinent information on the offense and selective personal information. However, wide variation exists in the information actually recorded by the nine district courts of Boston. On many of the variables over 50% of the cases had missing data. The reasons given for not recording the data ranged from "not important" and "not necessary for administration of justice" to "probation central file already has the information".

While computerized systems don't guarantee that all relevant data will be collected, computerized records can easily be checked for missing data. Exception reports can then be generated so that the individuals responsible for data collection can fill in missing data where possible. Such reports also provide a way of monitoring data collectors, and encouraging them to improve the completeness of the information recorded.

6. Missing Variables

Another problem encountered in our pilot study was that many variables of considerable interest to researchers were not collected at all. For example, we would like to have more detailed information than marital status to describe defendants' family structure. While OBTS will not initially add new variables to those collected, it is possible that we can expand the scope of the system at some future date, once its utility has been adequately demonstrated to criminal justice practitioners.

D. CONCLUSION

In this paper we attempted to provide the reader with a basic understanding of the type of information obtainable from the computerized Offender Based Transaction Statistics (OBTS) System, which is presently in the planning stages. The proposed OBTS system will take information from the computerized criminal history (CCH) segment of the Criminal Justice Information System (CJIS) and design it so that it can be analyzed using available statistical software. OBTS permit us to track groups of individuals through several steps within the criminal justice system. Further, standardized information can be collected on an annual (or more frequent) basis so that changes in the criminal justice system can be measured. This should permit an improved understanding of how the units of the criminal justice system interrelate over time.

We identified and discussed four types of reports which could be obtainable from OBTS:

1. Descriptions of the flow of individuals through the criminal justice system. Reports in this group provide an overview of the criminal justice system. These reports are helpful to criminal justice planners, since they assist in predicting how and when a change in one part of the criminal justice system is likely to impact other parts of the system.

2. Statistics describing the characteristics of individuals (age, sex, education etc.) at various points in the criminal justice system (arrest, incarceration, etc.). Such information provides clues about the causes of crime. It also provides information helpful for the projection of crime rates. Finally, it provides information of use to those planning specialized offender services. While there is a significant amount of information presently available on offender characteristics, OBTS will permit a significant expansion of this knowledge.

3. Management Information Reports. While OBTS has been primarily designed as a research tool, specific reports of interest to managers in criminal justice agencies can be generated. For example, police departments may wish to know how the individuals they arrest fare in the courts.

4. Studies examining the relationship between two (or more) variables of interest. For example, a study could examine whether the criminal justice system appears to be discriminating against an individual on the basis of race or sex.

The last section of this paper explained the major advantages of a computerized OBTS system compared to manual studies:

1. A computerized system would significantly decrease the time needed for data collection and thus increase the timeliness of reports.

2. OBTS will permit more flexibility in sample design, so that information on individuals throughout the state can be obtained and so that rare events can be easily studied.

3. Large samples can easily be obtained with OBTS. This will make research results more precise and will also simplify the task of determining whether observed relationships are spurious.

4. Checks on data accuracy and completeness will be built into the CJIS system. This should lead to improvements in the quality of the data.

5. Once OBTS has had a chance to prove itself a useful tool, it should be possible to increase its scope so that additional variables can be included in the system.

Two basic decisions about OBTS must be made now. First, are the beneifts of CJIS including OBTS sufficiently great to warrant Massachusetts' paying for its operational costs? This report has not directly addressed that question, but has provided information of relevance in answering this question by explaining the potential advantages of the OBTS segment of CJIS.

The second decision relative to OBTS which must be made in the near future is: How should OBTS be designed in order to maximize its usefulness to criminal justice personnel. The present design consists of a general purpose program to convert the computerized criminal history (CCH) portion of CJIS into a format easil used by researchers. The files obtained will use the individual as the unit of analysis and will be in a format suitable for analyses with fortran, SPSS, and other statistical packages. After this general OBTS software is written, it will remain for SAC to write programs to obtain specific information from OBTS. Since it will not be possible to perform the necessary work for all possible OBTS uses at one time, we feel it is necessary to priortize the

uses of OBTS. This will permit us to commence with the reports of most general utility before working on those of lesser importance. We have therefore enclosed a questionnaire with this report which is designed to elicit information on the most essential uses of OBTS. Analysis of these questionnaires should also provide information of use for follow-up meetings among interested parties.

APPENDIX

Tentative List of Variables From CJIS To Be Used In Preparing OBTS

1. Date of Arrest
2. Arrest Offense Code
3. Date of Offense
4. General Offense Code
5. Multiple Offense Sequence
6. Court Offense Code
7. Court Number
8. District Court Docket
9. Defendant Counsel Type
10. Judge's Name
11. Appearance Dates
12. Disposition
13. Address
14. Date of Birth
15. Marital Status
16. Occupation
17. Race
18. Sex
19. Place of Birth

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