Undergraduate Research in the Community Award

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A Study on Hybrid Allocation Mechanisms for Alaska Sheep Hunting Permits

Abstract

The state of Alaska currently distributes permits for high demand sheep hunting areas in a lottery. Due to changing conditions and demographics within the state ordinary lotteries are becoming impractical due to their inherent inefficiencies. Adding an auction element to the current lottery system could improve the efficiency of sheep hunting permit distribution. This study investigates if such a hybrid system could improve permit distribution efficiency by insuring that permits go to the hunters who value them most while at the same time capturing a greater portion of the value of the permits.

The goal of this project is to gather field data that can be used to estimate the demand curve for purchasing sheep hunting permits. Such data would allow estimation of revenue and equilibrium prices for a sheep hunting permits at auction. Equilibrium prices could then be used to calculate the optimum ratio of permits to auction out versus distribute in a lottery. Such prices would also be used to predict the feasibility and potential social impact of implementing such a system.

Introduction

Whether a proposed system will work better than the current one depends on the level of demand for hunting permits. Too high of demand and therefore prices would render a hybrid system politically infeasible as it would violate equal access principles. Knowing the demand for those permits at auction would provide the other needed information to analyze any potential system. Estimating the demand for auctioned permits would allow evaluation of systems proposed to improve on the current one.

Lottery systems are a common method of distributing permits in the western United States. Alaska, Arizona, Colorado, Wyoming, Idaho, and New Mexico all use some variation to lotteries to distribute high demand hunting permits. The methods range from a basic lottery to complex systems that account for past unsuccessful entries in various ways.

Alaska uses a basic lottery to distribute its high demand permits. Every year the Alaska department of fish and game distributes a pamphlet describing the hunting permits available and listing instructions for entering. The Alaska department of fish and game then conducts a drawing from the received entries and awards permits based on the results. (ADF&G Winter hunting supplement)

According to the online summary sites of their respective systems, Arizona, Colorado and Utah all use point systems in conjunction with their lotteries. (Arizona Rulebook, Colorado Rulebook, Utah Rulebook) In those states they award points based on the number of previous unsuccessful entries the hunter has. In Utah and Arizona, points awarded for unsuccessful entries can be used as an extra entry in the current lottery thus increasing a hunter's chances in a given year. Colorado has a different point system. Points are awarded for each year that a hunter does not receive their first choice permit. Then the high demand hunts are distributed to the applicants with the highest number of points first and the remaining permits are distributed by lottery. (DOW webpage)

Due to the random nature of lottery systems they tend to be less efficient in that the permits are distributed without regard for the hunters' value for them. Permits can be distributed to hunters who have almost no value for them while at the same time very desiring hunters can go for years without receiving a permit. Also due to the arbitrary nature of entry prices much of the value of the permits is lost.

Auctions have many attributes that make them desirable for distributing publicly held goods. The process of price discovery is transparent which reduces concerns about corruption. Price discovery also results in price flexibility and eliminates the need for research to establish prices like would be necessary in other markets. And lastly the transaction costs of auction are relatively low compared to other markets. (Holt 223)

Auctions have long been known as a way to efficiently distribute goods. Vernon et.al., Goeree and Offerman, and Evans, Vossler, and Flores all have shown experimentally that auction mechanisms typically capture above 90 percent of the social surplus for a good while insuring the goods go to the ones with the highest value for them.

Arizona, Alaska, Utah, and Colorado all have programs to auction permits either directly or through an intermediary. Alaska auctions two permits for each big game species.(ADF&G auction fact page) Arizona has three permits allocated for each of nine species.(

Arizona Wildlife Program Game subprogram pamphlet) Colorado has one permit per species that it auctions out.(DOW website)

The states describe the auction permits as a discreet revenue raising effort rather than as a mechanism to increase allocation efficiency. Alaska DF&G mentions how the state looks forward to working with a non profit organization “to benefit Alaska’s big game species” (ADF&G 2007). Arizona GFD advertises in their website that permits are available to use in fundraising events to raise funds to benefit fish and wildlife projects (AZ Wildlife Program Game subprogram pamphlet 2007). In fact, all the state discussion of permit auctions talk about how they can raise funds for worthy causes but never mention how such permits benefit hunters. It is unfortunate that the states seem to think of auctions in such a one dimensional way as such a market could greatly increase the efficiency of permit distribution.

The data will be gathered by traveling to the locations of the 2008 sheep hunting permit auctions and observing the number and value of bids for the permits. The data points from the individual bids will then be used to produce an estimated economic demand curve. Once the demand is estimated it can then be used to evaluate distribution system candidates. Such evaluation will be valuable for the Alaska Outdoor Council when they petition the state board of game to change the current rules in early 2008.

There will be two auctions at locations to be determined the first week of November. The investigator will coordinate with the auctioning agencies to attend the auctions to gather data.

The preferred method of data gathering would be for the investigator to conduct a sealed bid auction. Such an auction would allow the recording of the reserve value of every participant in the auction. That would provide many data points for analysis and result in a more precise estimate.

A Vickery or second price auction would be preferred as it would encourage bidders to bid and therefore disclose their full value for the permits. In a Vickery auction the winner of the auction does not pay their bid but rather pays the highest losing bid. That results in a dominant strategy of bidding the maximum amount the good is worth to the buyer.

The alternate method would be to observe the auction either in person or through electronic means to record the number of bids and their values. If the auction is conducted via computer bids then all the bids could be recorded like in a sealed bid auction. If the auction is conducted via public outcry, the investigator will observe with video equipment to insure no bids are missed.

The data will then be subjected to econometric analysis. Such analysis will consist of selecting an appropriate regression technique and subjecting the results to confidence testing. The result of the econometric analysis will be an estimated demand curve for auctioned Alaska sheep hunting permits.

Anticipated results

The anticipated result is to produce an estimated demand curve that can be used to predict prices for auctioned Alaska sheep hunting permits as the number of permits sold increases. The resulting demand estimate will then allow analysis that would either prove or disprove whether a hybrid system would increase efficiency and hunter satisfaction as compared to the current lottery.

Budget

The airfare is based on a three leg trip from anchorage to the location of the first auction, then to the location of the second auction, and finally returning to anchorage. The hotel is based on attending both auctions sequentially and the events occurring 3 days apart like happened last year. Lastly a rental car is projected for transport between the hotel and the auction location. Lastly either

Airfare	$ 1250
Lodging	$ 375
Car rental and other transport	$ 250
Misc. Expenses	$ 100
Total Budget	**$ 1950**

Projected Timeline

November 2007 Contact and coordinate with auctioning agencies to determine best method of data gathering

January 2008 Conduct final consultation with community partner for final input on project. Finalize data gathering method and prepare for auctions

February 2008 Attend and observe auctions, gather data

March 8, 2008 Finish analysis of data and produce initial report to advisor and community partner

March 15, 2008 Complete final report and schedule with community partner to present results

Mid- April 2008 present findings at ORS

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