HPM - Professional Service Fee Exercise
Ver 2.3 4/13 JM Gay DVM PhD


The purposes are for you to:

1. Estimate:
   - The “must have” income to sustain a family based on the living expenses for locations you are considering
   - The additional income you need for things such as servicing student loans, investing for retirement, buying a house, and paying a portion of offsprings’ college
   - The threshold professional fee, total and per hour, that you need to achieve that total “take home” income

2. Understand the effects of inflation, interest rate, and compound interest on money (time value of money), a fundamental concept
   - Use appropriate spreadsheet formulas to adjust money values and flows to a common baseline
   - Adjust for inflation, interest rates, and select appropriate rates of return for investments

3. Understand conditions affecting loan interest rates

4. Understand loan amortization, calculate loan amortization schedule (monthly payments) and total amount paid for a given loan amount and interest rate

5. Be aware of the likely effects of economic conditions on trends in tax rates, tax deductions, interest rates, and asset appreciation

6. Improve:
   - Spreadsheet skills (using spreadsheets to analyze herd data and to display results is an important herd production medicine skill desired by future employers)
   - Estimation skills

7. Become familiar with on-line resources for determining herd demographics and economics in locations you are considering

8. Consider:
   - The feasibility of this fee structure for your future clientele
   - Your potential value to future employers
   - The effects of previous debt on future borrowing capacity

Professional Service Fee Relationships Diagram - pdf

Basic Question: Are enough herds within your anticipated service range likely to consume enough of your services to provide at minimum an income sufficient to support your family?

Is the livestock economy in a given area large enough to support another veterinarian? This situation somewhat analogous to nested boxes or Russian nested dolls. How big does the outer one (regional livestock gross income) have to be to hold those between it and the inner one, your take home income.

Associated “What if” questions:
What if you: Worked more hours? Served more herds? Served fewer but larger herds at more distance? Provided more specialized services (e.g. doing ET) for more select herds (e.g. registered seedstock producers)? Increased the proportion of billable time? Charged more? Reduced overhead? Worked more hours in herd rather than “fire engine” work? Worked fewer “on-farm” hours, shifting to more small animal work? How much do you need to charge for individual animal procedures to cover your time as well as other fixed and variable expenses?

Estimation and Prediction:
This task is problem solving by prediction - making a reasonable estimate about how much professional income you'll need and whether your chosen style of practice will generate it in a particular location. Being about the future, the numbers being estimated are uncertain, some widely so, and thus the solution is uncertain. Because most major business decisions are made in the face of considerable uncertainty, developing good estimating skills is important. A great advantage of spreadsheet modeling is that you can easily try different scenarios, what if's, and, most importantly, evaluate the effects of "best case," "worst case," and "most likely" values for uncertain input factors. If we tend toward the optimistic, we often overlook dire consequences, such as losing our business, of potential "worst case" scenarios. If we tend toward the pessimistic, we overlook the reward of undertaking reasonable risks because risk and return are usually related.

Simply thinking about a question in a structured fashion incorporating what information you can find rather than in vague impressions and generalities is a major step ahead. To approach such ill-defined problems, identify the factual and procedural knowledge needed and, using the appropriate schema, create a model representing it. The model is a simplified approximation of reality containing the structure, relationships, and properties of the important factors involved. The schema is the specific problem type, such as time value of money that requires present value mathematics as part of building the model.

The four steps are to: 1) understand the problem, the solution requirements and potential models, 2) develop your schema and plan your approach, 3) develop the model to produce the solution, checking each step, and 4) determine if your solution is reasonable and the process makes sense. To understand the problem, start by identifying and mapping out the relationships between the important factors. What inputs are best estimated from external information and which are best calculated? What are potential sources of systematic (bias) and random (imprecision) variation in the external information? How large is the random "error" in measured values and how valuable is more precision? Do you have external validity between the source of values for external information and your situation? How can you quantify the relationships between the two types and describe them mathematically? What factors are most relevant? What can you simplify and assume without overlooking important ones? What are the important unknowns that you have to estimate? What and where are the sources of good information for estimates? How have others approached similar problems? Can you mimic their solution? If you get stuck, is a similar problem simpler that you could solve first? Could you solve a part of the problem first? Could you work backwards from a solution? Could you simplify or restate the problem? Could you use other data to arrive at a solution?

"Rules of Thumb" (RT):

- "Rules of thumb" are useful for making quick but rough estimates, for evaluating the reasonableness of things your read, and for checking predictions that you arrive at by more refined methods.
- Potentially useful rules of thumb are identified below by "RT:"; if you only use these you are ahead of not thinking about these issues at all

Pitfalls:

- Dangerous misperceptions, such as personal houses being good retirement investment vehicles, practice investments being fully recoverable upon practice sale, Social Security providing an adequate retirement income, minimum consumer debt payment being financially optimum, student loan deferment making good financial sense, and so on.
- Not understanding inflation and interest effects - convert values from different years to a consistent year, usually the current year, by accounting for inflation in historical values and converting future values to present values
- Failing to recognize the difference between net (what's left after obligatory expenses such as taxes) and gross (what comes in)
Misleading precision - although mathematical results appear falsely precise with many decimal places (significant digits), the answer is no more precise than the inputs allow, particularly when multiplied (error propagation) and based on highly variable future values.

Resolution too coarse - solution contains too much uncertainty, often hidden by misleading precision, to be useful but with more work would be less uncertain and thus more accurate.

Resolution too fine - investing more valuable time in refining a solution, such as by breaking down categories too fine, than imprecise estimates warrant and thus the information is worth.

Double counting, such as estimating taxes as a separate items when they are also embedded in another estimate elsewhere, including both rent and house ownership costs in household expenses, and so on.

Overlooking significant expense items.

Professional Fees Spreadsheet Project

Task: Build a spreadsheet using Excel, Google Drive, Apache OpenOffice, or Libre Open Office, for estimating minimum future professional fees and for doing "what if's."

- Make this spreadsheet model as simple or as complex as is useful for you; the most important important considerations being to uncover your mistaken perceptions and to not fool yourself by erroneously creating new ones.
- Because looking up and considering all the factors is a large task, I strongly encourage you to work in groups of students with similar interests.
- Everyone should complete their own final version.
- If you need a quick Excel tutorial, a Google search using the key words "excel tutorial" yields a bunch (800,000+ hits), one of which should be to your liking. Examples of two quick basic tutorials for Excel 2010 are pdf1 and pdf2. Find tutorials for other spreadsheets the same way.

To save your time, included are on-line information sources I’ve run across (e.g., high in Google hits and looked reasonable on superficial examination) that you may find useful to build your spreadsheet. Because I’m not qualified to verify these, I recommend using these as guides only to support conclusions from your own data and calculations. When you have serious questions, concerns, or significant money is involved, contact legal, accounting, and financial professionals who have a fiduciary responsibility to you. Be aware that most financial advisors are agents for financial services and do not have the fiduciary responsibility to advise you in your best interest and many have the agency dilemma. Finally, inclusion below is not endorsement!

If unclear about any of the following, please ask. You are welcome to discuss and to share the completion of this exercise with your peers for their ideas and with your mentors for their input, the more the better!

Consider putting your required family income items, your professional service fee calculations, and your client demographics on three separate sheets in the same book.

I) Household Budget Spreadsheet: Based on the family you expect to have five years or so post-graduation, estimate what you will need for your contribution to the support of your household:

Although you may not have considered what will be required to support your future household, it drives practice style choices, is an important consideration in deciding where to live, and often prompts job changes. Because choices are easier when you have less invested and sunk costs are lower, considering these factors early is important.

This task is essentially creating a projected family budget for personal financial management of fixed and variable expenses, debt repayment, and investment (wiki personal budget). More broadly, this is a component of personal financial planning and personal financial management, which has several more well
defined steps. Much personal financial management advice is available online, such as Investopedia Personal Finance 2/23/13, 2/28/13, CNN Money 101, Practical Financial Tips What is personal finance, personal finance and investing blogs via AllTop, and wiki. Certification is available for financial planners and analysts (CFP wiki, CFA wiki).

A general resource on financial planning is “Financial planning for the successful veterinarian” (GI Glassman, 2009 CVC Proceedings - html). Examples of books on personal finance and investing are Personal Finance for Dummies, 7th ed (Amazon), Personal Finance, 10th ed (Amazon - sample chapter pdf), The Investment Answer (Amazon), and The Intelligent Investor (Amazon).

A good starting point is to locate and download a family budget spreadsheet template with an inclusive set of expense categories and modify it to meet your needs, filling in your estimated family expenses, other obligations, and savings requirements. Googling “monthly family budget xls” returns 160,000 hits and “monthly household budget xls” 35,000. For example, Microsoft provides a Family Monthly Budget template. Others include American Consumer Credit Counseling Budgeting, “10 free household budgets” (Christian PF 9/10/08), and “Sample Monthly Expenses Spreadsheet (what mommy does 9/20/12). The important thing is not to overlook a significant expense category.

One complication of projecting across time is consistently accounting for the time value of money, which changes due to inflation and interest. Because much of the background information is in current dollars, the easiest approach is to convert historical and future amounts to current time (present value), estimating the income you would need now to support a family of the size you expect to have several years after graduation. Just remember that as time passes you have to adjust these values upward to account for inflation over the number of years that have passed (future value formula, compound interest).

Examples of websites for learning about financial time value calculations are TVMCalcs.com and Loan or Investment Formulas (S Brown, Oak Road Systems). You can use spreadsheet financial functions or one of the many online financial calculators, such as Ultimate Calculators, Financial Calculator, TimeValue Financial Calculators, and Easy Surf, do these. Adjust historical values to current values using the US BLS CPI calculator or, for more options, MeasuringWorth.com. Note that I’m not qualified to vouch for the mathematical correctness of any of these; try several and if they provide the same answer, they are likely mathematically correct. For more, see “Capital Management and Investment Decisions” - pdf

Time value RT: Rule of 72 - For money the doubling time in years is 72 / (percentage growth rate per year). For example, if an investment grows at 10% per year compound interest, it will double in 7.2 years. If the inflation rate is 3.2% per year, the long-term U.S. consumer inflation rate, what costs a $1 today will cost $2 in 22.5 years or, if you stick dollar bills under your mattress, in 22.5 years they will be worth one-half of their current value.

- Estimate subsistence household expenses:
  Subsistence household expenses are the minimum needed to support a family with the bare essentials to subsist; no savings, no eating out, no emergency fund, no insurance.
  ■ Break out the major household budget items, such as food, housing, clothing, transportation, media, insurance, so that you can adjust for your circumstances (e.g., home ownership vs. renting)
  ■ RT: USDA estimates that a child costs $227,000 to raise to 18 (which doesn’t include college!)
    • USDA Cost of Raising a Child Calculator
    • USDA Cost of Food at Home
  ■ For information on which to base your estimates of minimum values, see:
    • Living Wage Calculator (AK Glasmier, MIT) - estimates by city and county of typical required household expenses for various sized families (includes taxes that need backed out to avoid double
counting)
● Economic Policy Institute - Basic Family Budget Calculator - monthly housing, food, transportation, other necessities, taxes by family size and location (dated; need to adjust to current dollars and to “back out” taxes to avoid double counting)
  ○ What we need to get by, 2008 - pdf - explanation of the factors
● Historical data - US Census Fact Finder Community Facts by community or zip code. Enter your desired county, town, or zip code and click “GO”. Click the bullet “Income, Employment, . . .” under the heading “American Community Survey.” Scroll halfway down the page to the heading “INCOME AND BENEFITS (IN 2011 INFLATION-ADJUSTED DOLLARS); mean, median household family income, and mean earnings are an upper bound to typical household expenses
● Household income in the United States - wiki - background information
● Self-sufficiency Standard
● The State of Working America data
● Cost of living comparison calculator - Bankrate CNN - for comparing costs between locations

● Estimate additional household expenditures:
  Additional household expenditures needed to live better than the bare subsistence above (e.g., house ownership, better transportation, eating out, vacation), service your student debt, invest for retirement, fund college tuition for offspring, buy a new car, save for a house downpayment, take a vacation, spend on hobbies, and so on. Although some types of household expenses currently reduce income taxes, such as the home mortgage deduction, due to the Federal debt being 40 cents for every $1 spent many of these deductions are likely to be reduced if not eliminated entirely.
  ■ Estimate monthly student loan payment based on expected debt and interest rate:
    ● RT: Student debt repayment per month @ 6.8% interest is ~1.2 % of total debt
    ● RT: If student debt = annual starting salary, repayment per month = 15% of gross monthly salary
    ● FinAid Loan Calculator (note minimum AGI table)
    ● Wells Fargo Calculating Your Payments
    ● College Board Student Loan Calculator
  ■ Estimate consumer debt payments (eliminate as quickly as feasible)
    ● RT: It takes 19 years to retire a $2,000 credit card debt if you repay only the required monthly minimum amount at 18% interest (Kohl’s Rulebook)
    ● One 30-day late payment report to credit reporting agencies drops a 770 FICO score to 735, a 5% decline that results in a 1% increase in a new mortgage rate or $150K more over the life of a $500K 30 yr loan and takes up to 7 years to recover.
    ● Bankrate - Guide to Financial Literacy - How to be a savvy credit cardholder
      ○ Credit Card Calculator
      ○ FICO Score Estimator
    ● CNN Calculators Debt Reduction Planner
    ● Federal Reserve Minimum Payment Credit Card Calculator
  ■ Estimate approximate monthly retirement savings needed:
    ● RT: With 40% of an investment portfolio in equities, historically a retiree could withdraw 4% per year without running out of money (note: at the current low rates of return, only 2.8% can be withdrawn)
    ● RT: Invest 16.6% of your gross income in diversified market investment vehicles, such as exchange traded funds, over 30 years or more of your working life
    ● RT: If you expect to retire at 67 and to live to 92 (25 years), to maintain 85% of preretirement income (including Social Security payments as of 2012), at your retirement you need to have accumulated income producing assets (e.g., savings, investments) worth at least 8 times your ending salary, depending on your lifestyle, and, assuming a 5.5% annual return, should have acquired 1x by 35, 3x at 45, and 5x at 55. (from Fidelity age-based savings guidelines)
    ● For current bank interest rates, see sites such as Bankrate
    ● For typical stock market returns, see sites such as Observations and 1Stock1.com
- Microsoft Retirement Financial Planner spreadsheet template
- T Rowe Price Retirement Income Calculator
- Wells Fargo Retirement Planning Calculator

Step 1: Estimate the current required minimum annual income to support your retired family - Living Wage Calculator

Step 2: Divide this number by the annual percentage that can be safely removed annually from your retirement savings (RT: ~3 to 4%) and have it last the duration of your retirement - This is the current value equivalent of approximate retirement savings that you need to acquire, assuming no Social Security.

Step 3: Estimate the current retirement savings needed for annual elective expenses (vacations, cruises, new vehicles, financial gifts, . . .) by repeating step 2 with those annual amounts

Step 4: To estimate the value in dollars at the time of your retirement, enter the typical value of inflation (RT: ~4% annually) and the years until your retirement into the compound interest future value formula: 

\[ FV = PV \times (1 + i)^t \]

- Estimate personal insurance needs - medical, household, auto, term life
  - For background, see resources such as insurance wiki, Investopedia Intro to Insurance, and other online resources.
  - Sufficient term life insurance to meet current and future obligations, such as paying off mortgage, providing family support, funding offspring education expenses, and covering debts not discharged by death. For unbiased advice see non-insurance company associated resources, such as Kiplinger’s “How much life insurance do you need?”
  - AVMA GHLIT family medical insurance (2 35-yr old adults, 2 children) was from $351/mnth ($5,000 individual deductible) to $977/mnth ($1000 individual deductible, 80/60 co-insurance, $20 doctor office visit copay, prescription $25)) but this is changing rapidly as Obamacare is implemented.
  - Medical expenses are a leading cause of personal bankruptcies and many of these individuals had some form of medical insurance.
  - Renters or homeowners property and casualty insurance. Property losses due to theft or casualty event (e.g., flood, landslide, hurricane) excluded from homeowners insurance coverage are a common cause of personal bankruptcy. For advice, see Investopedia Property and Casualty Insurance, WSJ “How to insure your home”, and other online sources
  - Being perceived as having “deep pockets”, veterinarians likely need umbrella liability coverage beyond malpractice for personal assets

- Estimate future debt limits
  - RT: Total monthly debt (e.g. student loan, house mortgage, car loan, credit card (consumer) debt, practice buy-in loan) and other required payments (e.g., child support, alimony) should be less than 36% of gross monthly income
  - DTI - debt-to-income ratio - wiki
  - Wells Fargo How to calculate your ratios
  - Burzenski & Co calculators

- Estimate sizes of potential future major expenses
  - Estimate future interest rates (best case, worst case, likely case) - Bankrate
    - Besides applicant creditworthiness, mortgage interest rates are driven by inflation expectations and the term, longer terms (e.g. 30-yr vs. 15-yr vs. 5-yr) being regarded as riskier and thus higher, and loan characteristics such as variable vs. fixed, balloon, and so on.
    - Over the past 40 years, 30-yr fixed mortgage rates have ranged from a high of 18.45% and 2.3 points (1981) to the a low of 3.35% and 0.7 points (2012), have averaged of 8.64% with a standard deviation of 3.00%, a median of 8.15%, a 25th percentile of 6.63% and a 75th percentile of 10.07% - FreddieMac
    - Loan amortization schedule (loan payments) - wiki
      - Loan Amortization Schedule Calculator (USA Credit Union)
- Loan amortization schedule - Microsoft download
  - Googling "xls loan amortization schedule" identifies more downloads
- Loan calculators - spreadsheet downloads
- Amortization Schedule Calculator - on-line
- Amortization calculator - on-line
- HSH Mortgage Amortization Calculators - on-line
- My Amortization Chart - on-line
- Mortgage Amortization Loan Calculator - on-line

- Estimate housing investment
  - RT: Monthly housing expenses (loan payment, taxes, insurance, upkeep) should be less than 28% of gross monthly income
  - RT: Annual costs (mortgage, insurance, property taxes, upkeep) are ~12% of value (roughly) or ~40% of mortgage payment
  - RT: Pundits suggest not buying a house unless you intend to live in it for 7 to 10 years
  - Real estate pricing wiki, Shiller index
  - To see an estimated current house value, enter the address into Zillow
  - Building-Cost.net Building cost calculator (median new US house was ~2,200 ft² in 2010)
  - The Case-Shiller index tracks housing prices - wiki
  - Money-Zine Rent vs. Buy a Home Calculator
  - Spreadsheet123 Breakeven Analysis Template
  - Vertx Home Expense Calculator (spreadsheet template download)
  - About.com How much home can you afford to buy? - information
  - CNN Calculators How much house can you afford? - calculator
  - MSN How much house can you afford? - calculator
  - Zillow How much house can I afford? - calculator
  - Bankrate New House Calculator

- Estimate car loan amount and ownership costs
  - AAA Your Driving Costs - 2013 - pdf
  - Edmund
    - True Cost to Own (TCO) - 5 year buying, ownership, and operating costs
    - car loan calculator
  - Kelley Blue Book

- Estimate future college expenses for children
  - T Rowe Price College Investment Calculator

- Estimate veterinary practice value for buy-in purposes
  - Get a clear picture of practice value - DVM360 3/1/05
  - What's the value? Basics of practice evaluation - VBA pdf

- Estimate the monthly savings needed for the above (e.g. house down payment, vehicle replacement, child's college tuition, practice buy-in)
  - Wells Fargo Savings Calculator
  - Vertex savings calculator - Excel download
  - Step 1: Estimate each amount needed and the year needed, such as mortgage closing costs (wiki calculator 1, 2) and 20% down (to get best interest rate and to avoid paying private mortgage insurance) to obtain a house mortgage in 5 years based on current house values.
  - Step 2: To estimate the annual savings you need to obtain that amount, use the annuity payment for present value formula and typical rates of return. For riskier investments with higher typical returns, such as the stock market, you may wish to calculate worst case as well as typical and best case. When are using low risk and thus low interest savings instruments, such as passbook
savings or certificates of deposit (CD's), a conservative estimate of how much you need to save per month is the above amount divided by the total number of months before you need the money.

- Estimate monthly amounts of other obligations (e.g., tithe, alimony, child support)
- Estimate monthly amounts of other elective expenses (e.g., electronic media, hobbies) not included above
- Estimate necessary monthly professional expenses if not covered by practice:
  - Long Disability insurance appx. $1,250 / year AVMA GHLIT brochure pdf (these are old rates - check with local AVMA agent)
  - Professional license fees appx. $200 / year per state
  - Professional memberships appx. $1,000 / year (AVMA, AAPB, state VMA's)
  - Malpractice insurance appx. $822 / year (AVMA PLIT professional liability 2013 rate card pdf - Food Animal $1 / $3 million)
  - Continuing education appx. $2,000 / year per meeting (registration, travel, lodging)

**Desired monthly net family income after taxes** = sum of the above

- Estimate monthly state and federal taxes:
  - RT: Federal Tax, Soc Sec, Medicare appx. 0.275 of gross salary
  - RT: For long run planning on tax rates and deductions, federal revenue (taxes) has to equal federal expenditures, which averages ~21% of GDP (wiki) and pay off the national debt (wiki)
  - Required Salary Calculator - unofficial on-line calculator for quickly estimating federal income and social security taxes based on gross monthly income but does not include state taxes
  - More accurate approach:
    - Federal tax rate - "Marginal Tax Rate Calculator" (2013 appx. 4.4% for $80,000 gross income with 3 dependents) - 2009 graphic
    - Social Security and Medicare rates (7.65% employed, 15.3% self-employed)
    - State income tax - see "State Individual Income Taxes"
    - tax rate = federal average tax rate + social security and medicare tax rate + state income tax rate
  - Monthly Taxes = tax rate /(1 - tax rate) * (net family income after taxes)

**Estimated Desired Monthly Gross Family Income** = Monthly Net Family Income after taxes + Monthly Taxes

- **Minimum Annual Professional Income** = 12 * Monthly Gross Family Income * Contribution Proportion
  - Contribution Proportion = 1.0 (100%) if sole provider; less otherwise (0.5 for 50%, . . .)

- For reference and comparison:
  - RT: Living expenses for a farm family of five are typically 75-80% of the cost of a new Corvette (Kohl's Rulebook)
  - AVMA Veterinary Salary Calculator
  - Every fall JAVMA reports the starting salaries of that year's graduates, such as JAVMA 239(7):953-957

II) **Professional Service Fees Spreadsheet**: Based on the financial support you expect to contribute to your family five years or so post-graduation, estimate what professional service income you need to generate that income:

Although you may not have considered what professional service fees that you will need to charge to generate sufficient family income, the two are closely related. Building a second sheet for professional fees separates your professional income side from family income side.

You can generate professional income several ways - by providing professional services yourself, by
managing others providing professional services, by establishing allied enterprises such as selling goods (pet supplies, pharmaceuticals, or biologicals), and by investing capital in practice assets, such as the commercial building housing the practice and capital equipment. How to best balance these depends on what provides the best returns to your scarce time and money resources. Capital invested in assets should generate a return based on the investment risk and lifetime that is at least equivalent or better than alternative similar investments. Otherwise, you should make the alternative investment.

Net income = Gross (total) income minus the expenses to acquire that income. How these expenses are parsed out depends on what is required for tax purposes and what is fair to the generators and the investors. If the details for buy ins and buy outs aren’t clearly and fairly established initially and regularly updated, usually by a good business accountant and appraiser, it will likely become a source of conflict among partners.

A general scheme from the wikipedia gross profit:

- Net sales = gross sales - (customer discounts, product returns, allowances)
- Gross profit = Net sales - cost of services and goods sold
- Operating profit = Gross profit - Total operating expenses (operating costs)
- Net Income = Operating profit - (interest, taxes, depreciation, amortization, rent)

The following service fee estimates are the minimum for “go/no go,” not the basis on which you should price your services. Your services must be priced on the basis of their value to the client, not on your cost to provide. If that value is not sufficient to provide a margin over the bare minimum, you need a different business plan!

- **Minimum Annual Professional Services Net Income** = Minimum Annual Professional Income from family sheet above - Professional Business Net Income
  - Professional Business Net Income is income from ownership of business enterprises, such as the commercial building housing the practice, pharmaceutical and biological sales, management of other income generating personnel, and so on.
  - As an employee who has not “bought in” to the practice (is invested in practice assets), this income is likely zero.

- **Minimum Annual Professional Services Gross Income** = Minimum Annual Professional Services Net Income / Net Proportion
  - Net Proportion is typically 0.40 to 0.60 for ambulatory practices without clinics
  - With clinic overhead (e.g., more equipment, inventory, real estate taxes, heating, electricity, technician, receptionist costs), percent net is typically 1/2 of that for ambulatory practices or 0.20 to 0.25 of gross income.
  - In other words, a typical large animal ambulatory practice should bill twice what they expect to take home in salary, whether using an hourly rate or billing per head
  - You can reduce overhead by driving smaller, planner (and to a point older) vehicles, minimizing inventory, reducing staff that don’t generate income, using older and less sophisticated technology, and so on

- **Calculate Average Daily Billing**
  - **Minimum Average Daily Billing** = Minimum Annual Professional Services Gross / Days worked per year
    - 50 weeks of 5 days per week with two weeks vacation = 250 work days / year
    - 51 weeks of 6 days per week = 306 work days / year
  - This is the average amount you have to bill daily to obtain your target take home income.
  - Keep in mind that if most of your work is seasonal, such as in grazing dairy or cow-calf herds using conventional services, considerably higher average daily billing is required during the heavy work season to compensate for the slow periods

- **Calculate Billed Hourly Rate:**
Minimum Hourly Rate = Minimum Average Daily Billing / (Hours worked per day * proportion of billable hours)

- Due to "windshield" and other nonproductive time, the proportion of billable hours is typically around 0.4 in an ambulatory practice with smaller clients (short on-farm time per call) and is greater with larger clients (more on-farm time per call).
- Consider the effect of long travel times to dispersed herds if you plan on a large practice radius.
- Note that adding one more billable hour per day or one more call per day has a big impact on professional income. Hence, long hours worked but a higher risk of burnout and family disruption.
- For perspective, Dr. M.L. Heinke estimates (Fee Setting: A look at margins, DVM Magazine, 2010) that a veterinarian with a salary of $80,000 working 40 hrs/wk, 50 weeks per year or 2,000 hours per year has to generate $400,000 of services to cover salary, overhead, support staff and profit in a typical small animal practice. If 50% of the time is productive, the veterinarian has to generate $400 per billable hour.

III) Estimate the Demographics of Your Future Clients 5 years Post-graduation:

- Identify the region in which you want to practice (e.g., Southeastern Montana)
- Define your primary practice type and time or species allocation (e.g. commercial beef cow-calf, registered beef, feedlot, commercial dairy, registered dairy, 75% small animal & 25% backyard livestock, 1/3 equine & 1/3 cow-calf & 1/3 small animal). Hint: Getting your spreadsheet working with just one species first is easiest; then make it as complex as you need.
- Define your approximate practice radius and the counties this covers (e.g., 100 mi radius, Powder River County) or the clientele strata (e.g., >1,000 cow dairies, herds doing ET) on which you wish to focus.
  - Put this description into your spreadsheet as a text block. Note that the larger your radius or the farther apart your clients, the more of your time that will be "windshield time" for which you don't get paid much if at all (e.g., call charge, mileage, airfare)
  - Putting the community into Google Maps (e.g., Cutbank, MT) gives an aerial perspective of the area, scale at the bottom left).
- If you wish to include non-agricultural animal practice, estimate their demographics
  - For non-agricultural large species, you will have to estimate the demographics. For example, the USDA enumerates horses and ponies on premises that are expected to produce $1,000 of agricultural product per year but the likely doesn't include typical suburban backyard horses.
    - American Horse Council (reports available for a fee)
  - RT: For small animals, an old but rough rule of thumb is that 1/2 half of the families own small animals and 1/2 of these are seen by veterinarians.
    - pet ownership (2006) - pdf by US Census Bureau -
  - Determine the number of people living within your practice radius
  - Use the Pet Ownership Calculator and the U.S. Pet Ownership Statistics in AVMA Market Research Statistics to estimate the number of pet-owning households for the community you selected, the number of each species, the proportion that will visit a veterinary clinic per year, and the average revenue per visit. Note that this revenue likely includes biologicals, pharmaceuticals, tests, and other services as well as professional service.
  - Based on the number of veterinarians providing non-agricultural species veterinary services in your practice radius, estimate the proportion of these that you will see and the gross income
- Determine the herd demographics for that type of client in the area or the strata you selected (e.g. estimate number of herds within practice area counties and distribution of herd sizes). Do that by that by:
  - Go to Census of Agriculture, select the appropriate census year (2007), select Full 2007 Census Report, the "All Counties by State by Table" and click on your state. Table 1 shows overall summary data. For herd size information, select the pdf for Table 11 "Cattle and Calves-inventory & sales."
Be careful of the definition of "cow"; cows "that have calved" classified as either "beef" or "milk cows" likely gives the better definition of the actual livestock enterprise size. The first set of inventory figures is for all cattle by herd size category for both 2002 and 2007. You likely want one of the next two groups under "Cows and heifers that have calved", "Beef Cows" or "Dairy Cows. Results for 2007 have the total state in the left column with the counties alphabetically in the rest of the columns. In each of these, under "2007 farms by inventory" the first row is the number of herds in that herd size category and the next row is the total number of animals in this herd size category.

- Copy the relevant section(s) of Table 11 from the relevant counties paste as a block into your spreadsheet.
  - You can do this by hand but by doing two "cut and pastes", one offset by a row, with careful deleting you can get both the number of herds and the total number of calved cows in the same row so you can add counties together and so on. Your table should begin to look something like the state table under "Herd Size Demographics" in Introduction to the Beef Cattle Industry and the Veterinarian's Role - putting "herd size" into your web browser Find function hits it.

- Estimate the proportion of the area herds in each size category that will be your clients, both occasionally and routinely and enter these proportions into your table.
  - For guidance in estimating the proportion of the herds in the different size categories that will consume your services, see:
    - For Beef cow-calf, see page number 49 of NAHMS Beef '97 Part II: Reference of 1997 Beef Cow-Calf Health and Health Management Practices (Table of Contents on pdf page 7) on the NAHMS Beef Cow-Calf Studies webpage.
    - For Beef feedlot, see page numbers 36, 37, 51, and 52 of NAHMS Beef - Feedlot Feedlot '99 Part I: Baseline Reference of Feedlot Management Practices(TOC on pdf page 3) on the NAHMS Feedlot Studies webpage.
    - Note: More recent surveys have been done for some of these species but the question wasn't asked on subsequent surveys or the results aren't yet available.
  - Approximately 20% of all potential clients, typically more of the larger rather than the small "backyard" herds, will provide 80% of your income (the Pareto Principle). The number of visits from the NAHMS tables above provide some clues.

- Set up the spreadsheet calculations for the number of herds and the average number of cattle in these "full service" herds
- Estimate the average travel distance and travel time to make a herd visit.
- If you wish, you can apportion your services and time across species and between ambulatory and in-clinic but remember to account for the different overhead structure.

Calculate Annual Professional Service Cost per Production Unit (typically per producing cow)

- **Routine Service Annual Gross** = Annual Gross Professional Services * Proportion of Gross from "Full Service" Recurrent Clients
  - In a typical rural mixed practice 80% of your large animal income will come from 20% of your clientele, (the Pareto Principle) these being "regular" or routine consumers of your services.
  - For dairy, reproductive programs lead to routine services being scheduled on a regular interval, such as every week, every other week or every month.

- **Annual Cost per Routine Client** = Routine Service Annual Gross / Number of Routine Clients
- **Annual Cost per Cow** = Route Service Annual Gross / Total cows in routine program
- **Optional** (but useful) - Incorporate individual animal service fees into annual income, which offsets herd income needed
Estimate the numbers of common individual animal procedures that you will perform annually in your practice area
  - E.g. uncomplicated calving, prolapse repair, C-section, eye enucleation, claw removal, DA repair, . . .
Calculate total charges for these that recover professional time, technician time, disposables and overhead
Incorporate this time and professional service fee into the above estimates.

**Questions for Consideration:**
- Compare your estimates to actual data from practitioners who you know that are practicing the way you intend to practice with the types of clients you intend to have. How does this compare to the hourly rates charged by your competition, both professional and otherwise? What is the current hourly rate in the area you would like to practice in?
- Compare your target value for Annual Cost per Cow to the current values from livestock enterprise budgets. Is your estimate reasonable? How large a percent difference would cause typical clients to switch? What could you do to close a gap that is too large? If the gap is large, recheck your assumptions (e.g., billable hours, days worked) above.
- For examples of what typical herds are currently paying, see the expenditures for veterinary services in resources such as Idaho Costs of Production, Iowa Livestock Enterprise Budgets, and Montana Livestock and Forage Production, Finance, and Economics Software Downloads. Googling "Livestock Enterprise Budgets" will bring up more from other states.
- For Idaho, select a year and then click on the type of herd that you expect will best match your clientele (if the search is blank, try an earlier year). Scroll down until you find the "Operating Costs" section and find "Veterinary Medicine".
- Be careful interpreting these - professional service is often lumped together with procedure fees, drugs, biologics, breeding costs such as frozen semen and so on. What is included in the category is usually described somewhere (under "Background and Assumptions" for Idaho). To estimate what was actually paid for professional services, you will need to "back out" what you expect those other items cost.
- For an estimate of costs of vaccines, wormers, implants, the on-line catalogs of the animal health suppliers are good resources. Examples of such vendors are the following (Allivet, American Livestock Supply, Animart, PBS Animal Health, Valleyvet)
- If necessary, use a target annual cost per cow to re-evaluate number of clients:
- **No. Cows Required** = Annual Professional Routine Service Gross / Annual Cost per cow
- **No. Routine Herds Required** = No. Cows Required / Ave. Herd Size
- Clients are accustomed to using a set of veterinary services (e.g. Bang's vaccination, heifer pregnancy checks, C-sections) common to their operation type and to paying so much per cow. Exceeding this, either by increasing prices or by increasing the set of services used by more clients, requires your marketing. New services have neither a pricing history or a historical expectation of consumption.

Other approaches or information:
- **Businesses need key parameters** (CE Gardner, Jan 03 DVM NewsMagazine)
- **Are you satisfied with your income?** How much is enough, and how do I get it? (CE Gardner, Jan 05 DVM NewsMagazine)
- The fastest way to build a million-dollar business (BNET John Warrillow 6/30/11)